This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

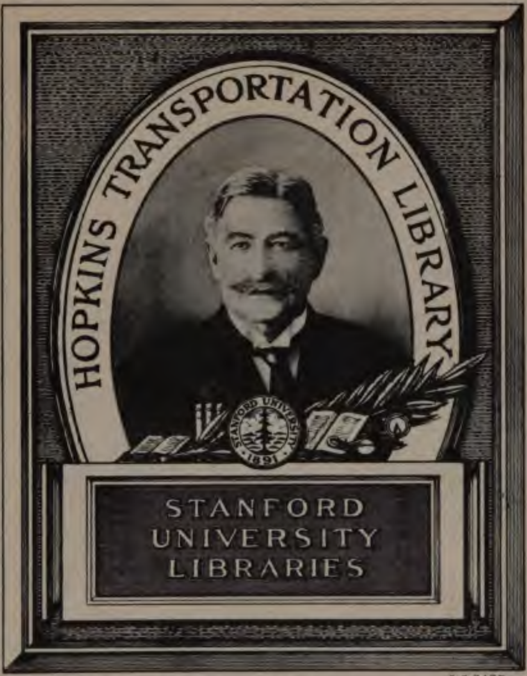
+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Full details of the railway disaster of 12th of March, 1857 at the Desjardin Canal.

HE2810 G78F9



HOPKINS TRANSPORTATION LIBRARY

STANFORD
UNIVERSITY
LIBRARIES

T OF

Pamphlet
Binder
Gaylord Bros., Inc.

HE 2810 .G78 F9
Full details of the railway di
Stanford University Libraries

HE2810
G7

June 1. 18

FULL DETAILS

OF THE

RAILWAY DISASTER

Of the 12th of March, 1857,

AT

THE DESJARDIN CANAL,

On the Line of the Great Western Railway.

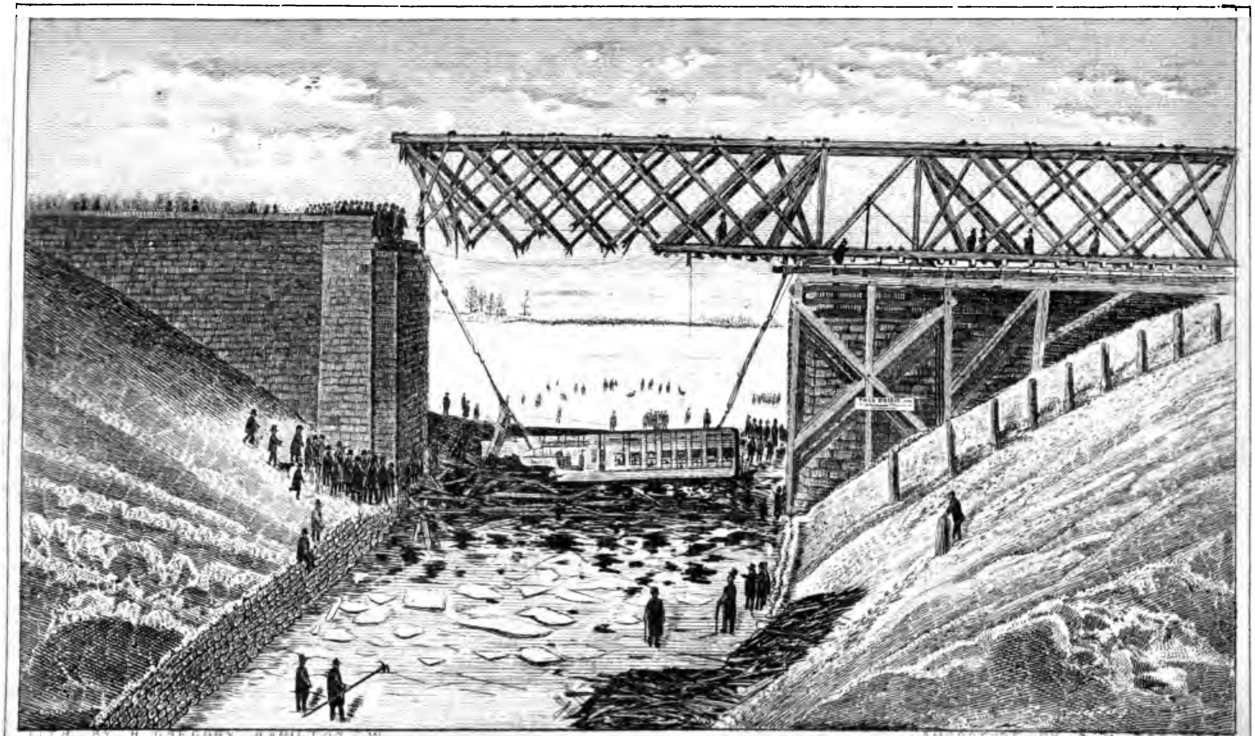
HAMILTON:
WILLIAM A. SHEPARD & CO., PUBLISHERS.

Printed at the "Franklin Lightning Press," by John W. Harris & Co.

1763

Pamphlet
Binder
Gaylord Bros., Inc.

HE 2810 .G78 F9
Full details of the railway di
Stanford Uni



LITH. BY H. GREGORY, HAMILTON, C.W.

AMBROTYPE BY D. T. PRESTON

VIEW OF THE RAILWAY BRIDGE AT HAMILTON THE MORNING AFTER THE DISASTER

Pamphlet
Binder
Gaylord Bros., Inc.

HE 2810 .G78 F9
Full details of the railway di
Stanford University Libraries

1763

THE GREAT RAILWAY CATASTROPHE

OF THE 12TH MARCH, 1857,

ON THE DESJARDIN CANAL BRIDGE,

ON THE LINE OF THE GREAT WESTERN RAILWAY.

[The object of the Publishers of this pamphlet is two-fold,—first, to place on record, in a concise form, a narrative of one of the most fearful casualties of modern times, collated from reliable sources; and, secondly, to pay some slight tribute to the memory of those beloved fellow-citizens who perished in that fearful catastrophe, and now slumber in the silent tomb.]

The Twelfth of March will long be remembered in Canada as a day of sad bereavements and heart-rending reminiscences.

On the afternoon of that day (1857) there left Toronto the usual passenger train for Hamilton. As near as can be ascertained, there were about one hundred persons on the train. The usual calls were made at the way stations, and the train arrived at the Desjardin Junction at its appointed time, having taken on about the same number as had been set down, so that the train was much about as we have stated it. When approaching the Junction, the customary signals were given, and the train was brought on from the Toronto Branch (as the Hamilton and Toronto Railroad is called) into the main line of the Great Western Road. But before we proceed further, it may be well to explain the condition of things at this point—a point which has now acquired a world-wide fame for death and disaster.

Within forty yards of the junction of the two roads, the Great Western crosses the Desjardin Canal, which is a short navigation connecting the town of Dundas with Burlington Bay, at the head of Lake Ontario. Prior to the construction of the Great Western Railroad, its course was circuitous, winding round the Heights at the bottom of a deep ravine. An attempt was made by the engineers of the Company to construct a bridge at the point where the line crosses the old canal channel; but after the expenditure of a large sum of money, it was deemed to be impracticable, as no good foundation could be got, and it was consequently abandoned as being a "bottomless pit," by which name it is yet known. An arrangement was then effected with the Canal Company (which was originally started into existence by an enterprizing French gentleman who resided at Dundas, named Peter Desjardin) by which the Canal was carried directly through the Heights, and the so-called "bottomless pit" was filled up. It was at this embankment that the fearful collision of last January occurred, by which four persons lost their lives, and numbers of others escaped as by a miracle.. Between the Heights and the Bay, the Canal is crossed by a swing-bridge of sixty feet span, the abutments being of solid masonry, and rising forty feet above the level of the water, which is there twelve feet deep. At the distance of forty yards on the north-east side of the bridge (from which direction this ill-fated train was proceeding) there is a switch, by means of which the rails on the Toronto branch are united with those on the main track of the Great Western line, there being only one track over the bridge, and hence the necessity of this switch. When the train passed this point, there were two men in attendance at the switch, the one having just come on duty a little ahead of his given time, to enable the other to proceed to the city on that train, as was his custom. They both agree that nothing appeared to be wrong as the locomotive passed over the switch; one of them jumped on the platform of the last car, and held on for a moment by the iron rods; the brakes had been loosened, and onwards went the train.

We have said that the train had passed the switch apparently all right; in a moment or two, the locomotive enters on the bridge; one sharp, shrill whistle gives the only warning to the passengers that between them and eternity there is left scarcely sufficient time to say, "May the Lord be merciful!" The *Oxford* sinks through the floor of the bridge, and goes down at a fearful plunge through the ice, and the waters hide it from view, together with that brave driver BURNFIELD, who perished at his post, in the execution of his duty. Next comes the tender, and then the baggage car, in which there were two or three persons. And then the first passenger car, with its fifty precious souls, comes down the rails and takes the fatal leap, either turning a complete somersault or careening over upside down. It lies across the bed of the canal, the ice being broken through, and the car is about half-filled with water. But there is yet another car-load of mortal beings poised for a moment on the top of the wall, and then it, too, plunges into that fearful abyss leaving the hind trucks on the rails above—a poor remnant of a whole train, which but a moment before was as perfect as skill could make it, and bore homeward many a manly heart, and fondly-beloved father, mother, husband, wife, brother, sister and child. A few escaped, and others perished in the attempt; but not less than fifty-seven or sixty lives were, "at one fell swoop," cut off in the twinkling of an eye, as it were, and souls were landed on the shores of eternity which had no time to reflect of its grandeur or its despair.

As might be expected, the news of the tragedy ran from mouth to mouth with the speed of evil-tidings, and every possible means were employed to rescue the wounded, the dying, and the dead. Throughout the whole of that night and during the succeeding days and nights, there was an army of men engaged in breaking up the submerged cars and taking out those who had been imprisoned. We shall proceed presently, to detail the results of these labors more minutely, as also the hair-breadth 'scapes of those who still live to tell the sad story of their experience. In the mean time, we must speak of the immedate effects of the catastrophe. It was one of those cold evenings which sometimes succeeds a clear sunny day in March, and the labours of those brave fellows who had chosen the task of wreckers were cruelly heightened by the intensity of the frost, for many of them were saturated with water at the freezing point. Thousands of the citizens of Hamilton—men, women, and children—hurried to the scene of the disaster;—the city was wrapped in mourning, as one by one some valued resident or well-known friend was borne to the Charnel house. The newspaper and telegraph offices were besieged with anxious enquires after absent friends ; and as the news spread to Toronto and distant points, the intensity of feeling was even more and more heightened by the interchange of communications which left no doubt as to the fate of others, not yet recovered from the wreck. This continued throughout the whole night (the telegraph offices being kept open) and during the next day.—The bitter lamentations of those who came to search for lost friends among the dead at the railroad depot was such as can never be forgotten by those who witnessed the grief of a mother as she picked out an only son perhaps from among the dead ; a husband who recognised in the mangled and stiffened corpse before him, the partner of his life ; a wife who shrieked with horror and fell prostrate over the husband she adored. Ah ! it was a fearful sight, to behold a woman with her infant clasped in the arms of death; sisters lying side by side; whole families grouped together in affrighed attitudes ; here an unclaimed child or woman, there a stranger in a strange land.

Neither wealth, nor power, nor skill, nor learning, nor courage, nor worth, nor experience could help or save at that dread moment ! In that assemblage were men who had run the gauntlet with Death by flood and field; had passed through many trials, and had experienced some successes ; men who had grown rich in worldly goods, amid the strife of life and in opposition to many discouragements ; had had cause to mistrust a stout heart, and yet had outlived trying difficulties. But now they mingle once more with that dust from whence all sprung, and to which all must return, for

> Death hurls the monarch from his throne,
> Death claims all living for his own!

Turn we now to a closer examination of the results of this sad calamity. It may be better imagined than described, how tremendous was the frenzy of the populace as the news ran through the streets, and the names of beloved friends and relatives were repeated in the lists of victims.

The number of narrow escapes is very remarkable, and worthy of a passing reference. One gentleman paid a cabman handsomely to gallop to the depot in Toronto, but arrived just too late ; another was on the cars, but got off for some trifling purpose at the suggestion of a friend, and was left ; another was detained by an invitation to dine with a Cabinet Minister ; another procrastinated, he knows not why, till it was too late, though he desired to take that train ; others, again, stayed over to see Miss Nickinson perform at the theatre ; another missed the cars by half a minute at Port Credit ;

another, the same at Waterdown; another got off and was left behind at Wellington Square. A lady who was killed was taken on in the morning on her way down, after the train had started. Such are the trifling circumstances by which life's tenor is held, or for ever snapped asunder.

LIST OF THE DEAD.

The following is a correct list of the dead, taken from the Coroner's Book :—

1.—Donald Stuart, Merchant, Hamilton.
2.—A. Grant, Goat Island, Niagara Falls, New York.
3.—John Russell, Railway Contractor, Brantford, of the firm of Mellish, Morrell & Russell.
4.—Mrs. Russel, wife of the above.
5.—Timothy Doyle, of Dumbarton.
6.—Ann Doyle, wife of the above.
7.—Patrick Doyle, brother of No. 5.
8.—Timothy Doyle, son of No. 5, aged 3 years.
9.—Joseph Barr, Merchant, Niagara.
10.—James Gannon, Chicago.
11.—Samuel Zimmerman, Niagara Falls.
12.—Thomas Benson, Secretary and Treasurer of the Port Hope, Lindsay and Beaverton Railway, Port Hope.
13.—John Sharp, Bookseller at the Hamilton Depot of the G. W. R.
14.—Rev. Alfred Booker, Pastor of the Park Street Baptist Church, Hamilton.
15.—Erastus W. Green, (unmarried,) Hamilton.
16.—John C. Henderson, brother-in-law of C. J. Brydges, Esq., Managing Director of the Great Western Railway.
17.—Mahaly Clare, daughter of John K. Clare, merchant, Hamilton, aged 2 years.
18.—Daniel Secord, Brantford.
19.—20.—Mrs. Beck and infant child, Hamilton.
21.—Edwin Duffield, late mate of the *Europa* steamer, Hamilton.
22.—Joseph Major, Two Rivers, Michigan.
23.—Captain James Sutherland, late of steamer *Magnet*, Hamilton.
24.—Adam Ferrie, Jr. Hamilton, eldest son of the late Colin C. Ferrie, Esquire.
25.—Geo. Darragh, Nelson.
26.—James Ross, Gas Inspector, Toronto.
27.—Jacob C. Snyder, miller, St. Jacobs.
28.—John Wilford, miller, (lately from England,) stopping at Dowling's Hotel, Bay Street, Hamilton.
29.—Alexander Burnfield, engineer of the ill-fated train, Hamilton, leaves a wife and small family.
30.—Mr. Barton, sen., of Stratford, a very aged and respectable man.
31.—Robert Crawford, farmer, Saltfleet.
32.—Wm. Sturdy, London, in employ of Robert Walker, merchant tailor.
33.—Hugh McSloy, merchant, St. Catharines.
34.—Rev. Dr. Heise, German Minister, (Church of England,) Hamilton.
35.—Joseph Harkness, Toronto, late Band master of the Rifles ; more recently Quartermaster in the same corps.
36.—Charles Brown, merchant, Galt.
37.—Mr. Kendall, [ticket agent for "Toronto Omnibus line,"] formerly printer of Rochester.
38.—Diana McFiggan, servant of Mr. Irving, Solicitor, G. W. R.

39.—Mrs. Stevenson, wife of P. S. Stevenson, Esq., commission merchant, Hamilton, daughter of Sheriff Thomas.

40—An old man. name unknown, drab overcoat, blue vest, red comforter, striped woollen mittens. In his pocket a bag of silver, also some papers, among which was a note drawn by J. Maxwell in favor of Thomos Brown, and dated Bowmanville.

41.—John Morley, Thorold. one of the best plough makers in Canada.—His body was claimed by his friends.

42.—A young girl, named Ellen Devine, from below Port Nelson ; was going on a visit to her brother near Hamilton.

43.—Mary Devine, sister of the above.

44.—G. S. Sloan, merchant, Caisterville.

45.—David Curtis, Jr., of Ingersoll, (whose father was seriously injured).

46.—Darius Witter, of Markham.

47.—J. Bradfield, Clifton, farmer & flour merchant, returning with his wife from a visit to Dr. Cadwell, the Toronto occulist, who identified them.

48.—Mrs. Bradfield, wife of the above. The bodies were taken away by relatives.

49.—James Forbes, of Nelson.

50.—Colin Campbell, of Campbleville.

51.—George Ellard. of Albion, Massachusetts.

52.—G. McDennee, (supposed) a young man aged 25, bible with name in, but no residence. Papers and letters dated Shannonville. A miniature of male and female, and portmonnaie, with some money, were also found.

53.—Hugh McEvoy, of Walpole.

54.—Ralph Wade, Esq., of Cobourg. Mr. Wade was extensively engaged in the breeding and importing of improved stock, and was well known to the leading agriculturists of the Province.

55.—Mary Jane Davis, of Toronto.

56.—George Knight, of Windsor, the fireman of the locomotive.

57–58.—Mrs. Howden and infant child, of Weston.

59.—Mr. Farr, contractor, Hamilton.

LIST OF THE INJURED.

Mr. Thomas C. Street, of Niagara Falls, the eminent capitalist, and formerly M. P. for the county of Welland, has his collar-bone fractured, and also some injury in his right arm. At last accounts he was doing well. Mr. Street could give no account of the accident; he knew nothing till he was taken from the ruins.

Dr. Macklem, of Chippawa, escaped with some cuts and a bruise in the abdomen. Drs. Bethune and Frazer were both in attendance on this gentleman. He is slowly recovering.

Mr. Woods, of Woodstock, had his arm broken.

Capt. A. McBride, of Port Burwell, escaped with some injuries on the head.

Mr. Barton, jr., of Stratford, is much injured about the head.

H. M. Yerington, of Port Stanley, received a contusion on the head; not seriously injured.

John K. Clare, merchant, of Hamilton, received some severe cuts about the head, but not dangerously injured.

Mr. R. L. Hamlin, of Newcastle, C. W., not much hurt. He was in the last car. He says he felt the first shaking of the train, and then a shock, which must have been at the time when the engine went through the bridge. He saw the car losing its horizontal position, and was pitched head-foremost to the bottom. He was the first rescued. He describes the agony of the scene as intense, His clothes were completely covered with blood.

John Brennan had a slight wound on the face and bruise on the chest.

Michael Brennan had an extensive wound on the scalp and injuries about the chest.

Elizabeth Brennan had only a slight bruise on the head.

George Havill, bar-keeper at the City Bowling Saloon, bruised about the chest and hips.

W. R. Marshall, of Woodstock, was severely though not dangerously wounded. He was one of the first rescued, and was immediately removed to the residence of his brother-in-law, Mr. J. W. Frampton, Queen Street.

Edward McFeely, passenger from Toronto to Buffalo, was slightly injured.

C. Foster, passenger from Toronto to Suspension Bridge slightly injured.

John Henderson, passenger from Toronto to New York, slightly injured.

Jas. Barnes, passenger from Waterdown to Hamilton, collar-bone broken.

Ferdinand Baigner, passenger from Toronto to Buffalo, slightly injured.

THE ESCAPED.

Mr. Muir, Traffic Superintendent Great Western Railroad, had a most miraculous escape. He was on the last seat of the last car reading, when he was startled by the unusual motion of the train. Starting up and rushing to the door, he perceived what was the matter, and jumped off at the very moment the car was being precipitated in the yawning gulph beneath. Indeed the platform of the car was on a level with the severed timber of the bridge. With a powerful effort Mr. Muir leaped to a place of safety.

Richard F. Jessup, travelling Auditor of the Great Western Railway Company, was in the last car when the accident occurred. After passing the switch he felt an unusual motion which induced him to look out. He had barely time to leap from the platform to a place of safety, when the train took the fatal plunge.

Two railway men, Mr. Reed, of Suspension Bridge, formerly of the Northern Railroad, and Mr. Hill, of Toronto, and Mr. Barrett, Conductor of the train, were standing on the platform of the front car, and jumped off without injury.

Mr. Richardson, one of the Conductors of the Railway, but not then on duty, was asleep in the baggage car when the accident took place, and was conscious of nothing until he found himself lying on the ice almost unhurt.

Mr. M'Cullough, printer of the *Guardian* office, escaped with slight cuts on the head.

Owen Doyle. a resident of Dunbarton, Pickering, escaped from the first car through the window.

Two children of his brother Timothy Doyle, one a girl of eight years, also got out of the car in what appears a miraculous manner.

An Irishwoman who had two fingers broken, name unknown, was able to walk off immediately after the accident.

Statement of Mr. John K. Clare.

Mr. Clare, merchant of Hamilton, who was in the first passenger car, made the following statement to the Reporter of the *Spectator* :—

He says it is impossible the train can have been off the track, for it went smoothly until just at the bridge, when he felt a jerk and heard a whistle.—Hardly an instant afterwards a second jerk was felt, which was when the car was going over the precipice. The car turned upside down as it fell, but he cannot say positively whether it turned over sideways, or made a somersault in the direction of its length. He thinks the latter to have been the case. At the bottom, he was for some time in a bent and crouching position, almost sitting, on the inside of the roof of the car—the stove was hissing close behind him, and keeping him down. He felt the water come in and rise gradually to

or two slight cuts, and excepting a soreness would feel perfectly well. He returns home to-day.

Statement of Mr. H. M. Yerrington's.

Mr. Yerrington, who is from Port Stanley, was reported as severely wounded, but on visiting him this morning, we found him ready to go out, the report having originated from his clothes being perfectly saturated with blood when taken out. Mr. Y. was sitting at the front end of the last car with his feet on the stove, next in front of Mr. Zimmerman. Thinks they had been running some way—half a mile or more—at about ten miles an hour; did not hear any whistle, which he thinks may be accounted for by the noise; felt the jolting of the cars as if it was off the track, for sixty feet, or a little more than the length of the car. Not remembering the bridge, did not give any concern to the noise, thinking at the worst they could not go far at that rate, before they would hold up. He had never been in a collision, but had thought if he should ever be he would keep his seat; the determintion saved his life probably.

The glass in the cars broke, and he thinks some of the seats gave way before the car went over. Thinks that Messrs. Zimmerman and Farr were thrown down first, and he was thrown over the stove on them, being in the water and when taken out was a little out of his head, but came out all right after getting warm, with the exception of a cut under the left ear, and a scalp wound on the back of his head.

Statement of Mr. Marshall.

W. R. MARSHALL, of Woodstock, was one of the few fortunate persons who were not killed by the late fearful accident. From his statement which appears in the *Spectator*, we make the following extracts:—

"There were no incidents of a striking nature on the trip from Toronto to the junction with the main line near Hamilton. When within sight of the Hamilton station, Mr. Beatty asked me "what time it was?" I looked at my watch and told him it was a "quarter to six." About this time the train began to go slower. Nearly half a minute afterwards I perceived quite a consternation in the cars, passengers running to and fro, apparently much excited. At the same time, I felt a strange sensation as if caused by something impeding the motion of the train. It was not a shock, but at the same time every one seemed to think that something was wrong. As I was not aware of the dangerous character of the place we were approaching, I retained my seat, and advised others to do the same. A slight pause ensued, myself and those sitting with me, remaining still, but anxiously waiting the result, when with one jerk we were precipitated into the yawning abyss below. While descending I retained perfect consciousness, and felt we were going down some awful precipice; not a voice was heard in the descent. On reaching the bottom there was one general crash, after which I found myself in total darkness, hemmed in on every side; and crushed almost to suffocation by human bodies and broken seats. The blood oozed from my mouth, and it seemed as if every breath I drew would be the last. The next few minutes were the most awful I ever witnessed; oh, that it may never be my lot to experience the like again. Some prayed, others called upon the saints, others swore fearful oaths, and all seemed writhing in the deepest agony. I can only liken the place to a slaughter house. The blood streamed down over my face and clothes as if some huge beast had been slain above me. In this fearful situation were placed 80 or 90 human beings, who, a few moments before rejoiced in excellent health and spirits, their minds occupied with worldly cares or pleasures; little thinking they would be so soon called into the presence of their Eternal Judge. What an awful lesson does this shocking event teach those who habitually put off making their peace with God to some future day, or to a death bed. The writer of these few lines will consider himself amply repaid, if his description suc-

Pamphlet
Binder
Gaylord Bros., Inc.
HE 2810 .G78 F9
Full details of the railway di
Stanford University Libraries

ceeds in persuading one sinner to seek for refuge in HIM who promised to be a present help unto his people in every time of trial. We remained in the position above described for about ten minutes, during which time I spoke to several around me advising them to be patient and wait for help. The top of the car was then knocked in, giving us light and air, and enabling us to breathe more freely. At this instant, a crowbar or something of the kind from without grazed my temple, and the blow was about to be repeated, when, by a sudden effort I grasped the instrument, and called upon the person to desist or he would kill me. Immediately afterwards, a hand, (from the size, I should think it was a woman's) was placed completely over my mouth, so as to nearly suffocate me. With great exertion I removed it, and shortly after, being relieved from the pressure above, I succeeded in dragging myself from the wreck and reaching the edge of the canal, whence I was raised to the top by a chain fastened under my shoulders. On arising there, I was carried to the switchman's house, and received much kindness from the doctors in attendance, and also from many of the Company's servants who were anxiously and actively rendering every assistance in their power to the unfortunate sufferers."

THE SCENE AT THE BRIDGE, AND CLEARING OF THE WRECK.

The scene which was presented the instant after the terrific wreck had been consummated, beggars all description. The locomotive with its brave driver and fireman, completely submerged; two passenger cars, freighted with precious souls, and a baggage-car, shattered in every conceivable form of destruction. But if this ruthless material destruction was appalling, how terrific, how awful, was the crushing out of human life which attended it! From the splintered ruins of those cars arose cries and shrieks, groans, and objurgations of unearthly intensity; while through their ruptured sides and floors protruded the limbs and bodies of scores of the dead, wounded and dying, who but a moment before were in the hey-day of happiness. Palsied for a few moments, the bewildered survivors could only gaze helplessly upon the horrors before them. A reaction ensued, and then each flew to the rescue, impelled by a common instinct. Immediate assistance was had from the different shops, and persons engaged on the works at the Depot. All night, persevering efforts were made to extricate the bodies from the wreck. Rafts were formed on the ice, to enable the men with long poles and hooks to proceed with their mournful task in safety. All ntght, and all next day the wreckers persevered in their humane efforts until all the bodies were removed, and the *debris* of the bridge and the cars was cleared.

DAY OF FASTING AND PRAYER.

On Friday morning, the day after the accident, the City Council of Hamilton was promptly convened by order of the Mayor, and the following resolutions unanimously adopted:

RESOLVED,—That the Council having received information of the dreadful accident which has just happened on the G. W. R. R., in the vicinity of this city, offer their heartfelt sympathy to the sufferers and friends of the deceased.

RESOLVED,—That in humble submission to the Providence of Him, without whom not a sparrow falleth to the ground, but whose inscrutable wisdom permitted this City to be visited by a fearful calamity on the Great Western Railroad,, by which some of our most respected friends and citizens have been hurried into eternity, be it therefore resolved, that the inhabitants of this City be respectfully required to set apart Monday 16th of March, as a day of humiliation; they are requested to cease from the ordinary occupations of the week, and meet in their respective congregations on that day, and that proclamation of his Worship be issued to that effect.

In accordance with the above resolution, Monday was observed as a day of humiliation and prayer. All kinds of business was suspended, and public worship was held in the various Churches. On the evening of Monday one of the largest religious meetings ever assembled in Hamilton, was held in Knox's Church, James Street, of which Rev. Dr. Irvine is Pastor. Every pew was densely packed, and a deep solemnity seemed to mantle every countenance, while many faces were bathed in tears. It was a Union Prayer Meeting, and was attended by large numbers from the various congregations in the city. Before dismissing the meeting, at the suggestion of one of the deacons, Mr. Irvine announced a collection "for the purpose of erecting a monument to Rev A. Booker, when the plates passed round, and nearly one hundred dollars were collected. It was announced that any parties who desired to contribute to this becoming and truly grateful object might have an opportunity of doing so by handing their donations to any of the following ministers, viz: Revs. E. Ebbs, W. Ormiston, W. Stephenson, Dr. Irvine, Dr. Inglis, or E. B. Harper."

THE FUNERAL OBSEQUIES.

The last, sad and mournful duties to the dead were performed on Sabbath and Monday. The bodies of Rev. Mr. Booker, Mr. Henderson, Mrs. P. S. Stevenson, Mr. Stuart, and Mr. Burnfield, were interred on Sunday, and those of Captain Sutherland and Adam Ferrie, jr., with others, on Monday. All the funerals were attended by an immense concourse of people. The city was shrouded in sackcloth; the bells of our Churches tolled the mournful requiem of the slaughtered victims; and our streets were crowded with long funeral processions, slowly and silently following the dead to the place of sepulture. It seemed as if the entire city had turned out to express their sorrow for the dead and their sympathy with the bereaved. The body of S. Zimmerman was taken to Niagara Falls on Sunday, and buried on Monday, with Masonic honors. Large numbers of leading men from various parts of the Province and the United States were present; and the whole country in the vicinity appeared to have turned out *en masse*. It is estimated that upwards of ten thousand persons were present. All seemed deeply affected by the loss which has been sustained and desirous of paying the last tribute of respect to the departed.

BIOGRAPHICAL SKETCHES.

SAMUEL ZIMMERMAN, OF CLIFTON, NIAGARA FALLS, C. W.

The late SAMUEL ZIMMERMAN was born in Huntington County, Penn., in the year 1815, and spent his early years in that state. In 1842, he removed to the Canadian Province, having no capital but his own energy and farsightedness. He said to some persons who enquired of him respecting his commencement upon the line of enterprise which he has of late years followed so successfully, that his only effects, when he arrived in Canada, were a gray horse and buggy. It might be supposed, as he himself added, that he possessed no more capital than he required for his immediate use. He was then but 27 years of age. He located at Thorold, and his first undertaking was the construction of 4 locks and an aqueduct on the Welland Canal, which involved something like $100,000. Subsequently, he built, under contract, 129 miles of the Great Western Railway, the contract price for which, was about $600,000. The building of the first Suspension Bridge at Niagara Falls and of the great railroad bridge at the same place, engaged his attention and commanded his resources. He built the Cobourg & Peterboro', the Port Hope and Lindsay, and the Erie and Ontario Railways in Canada. Mr. Zimmerman originated, and had just completed the preliminary arrangements for building a new road to the west, nearly parallel with the Great Western, to the south of that line, and on a shorter and better route. This work was to cost some $10,000,000. It is doubted whether any man possesses the energy and capacity to successfully assume a work which Providence had prevented him from carrying forward.

Not long since, he had purchased a large property at Clifton, Niagara Falls, and in the vicinity of the Suspension Bridge, including the fine hotel known as the "Clifton House," and his excellent taste and liberal ideas were illustrated in improving this fine estate, and adorning it artistically. Fifty-two acres on the cliff, directly opposite the American Falls, are enclosed with an iron fence and private hedge. The topography of these grounds is diversified and picturesque. That part nearest the river is level, and this is laid out in gravelled walks, with shrubbery, forest trees and fountains. One fountain was constructed at a cost of $15,000.

These groves and shaded promenades are lighted during the summer eveniegs with gas. The proprietor's residence stands on a bluff some 60 feet high, midway of the ample grounds. In the summer it is nearly hidden by the foliage of the surrounding trees. This dwelling is an unpretending mansion, but has always been the scene of generous hospitality, while occupied by its princely owner, who has just been carried from it to his long home.

He had perfected the most extended and elaborate plans for the establishment near the same spot of an elegant mansion-house, with the proper accessories and surroundings. The foundation of a building of Cleveland sandstone and Canadian brick, to cost $175,000, were laid last year, and the work was to be prosecuted immediately. His lodges, of which there are four, the conservatory, and tenements for his servants, are models of taste. His stables, completed last year, cost $48,000. From the terraces on the grounds and the portico of his dwelling, a splendid view of the American Falls is obtained.

The "Clifton House" is near by—one of the most complete and popular hotels that any watering place can boast. This was owned by Mr. Zimmerman and was worth over $300,000.

At Elgin, on the Western side of the river, at the Suspension Bridge, the deceased formerly owned a large property, which his own liberal expenditure and judicious enterprise had rendered very valuable. This was sold last year to his friends, Messrs. Pierson & Benedict, for $200,000. At Toronto, he owned property valued at $400,000. At Hamilton, an estate worth $100,000. He was owner of the steamer *Zimmerman*, on Lake Ontario, and half owner of another boat, the *Peerless*—his interest in both amounting probably to $100,000. Some 18,000 acres of land, in different parts of Canada, belonged to him. He estimated this property to be worth $3,000,000.

Mr. Zimmerman has been twice married. His first wife was Miss Woodruff, the only daughter of a worthy and influential man at St. Davids, near Niagara Falls. This lady bore him two sons, who are still living—John, aged 8 years, and Richard, aged 6. She died in Nov. 1854. On the 16th December last, he was married to Miss Dunn of Three Rivers, C. E. The deceased was a man of limited education, but he was endowed with sterling mental gifts.

The brothers, Martin and James, both younger than the deceased, have been associated with him here. They will succeed him in some of his enterprises.

CAPTAIN SUTHERLAND, OF HAMILTON.

Captain Sutherland was born in 1805, in the island of Hoy, in the parish of Walls, Orkney, and went to sea at the age of 17, in the employ of the Honourable Hudson's Bay Company, and had the honour of sailing with the Right Hon. Sir John Franklin, to Hudson's Bay. He subsequently went to the Baltic, to Holland, Portugal, and the Brazils. He was for some time mate of the Royal William, the first vessel that crossed the Atlantic wholly by steam.

On one occasion he was wrecked off the coast of Prussia, and remained for sixteen hours on the wreck, with his collar bone broken. He settled in Canada in the year 1831, and was appointed captain of the steamer Queenston in 1833. He afterwards commanded in the Traveller, the St. George, Cobourgh, the

Eclipse, and Sovereign. In the year 1846 he built the steamer Magnet, in the docks at Niagara, which proved herself the best that had sailed on lake Ontario. In January, 1837, he fitted out the Traveller at the command of the government to carry troops and stores to Kingston and underwent great difficulties in fulfilling his duties. We understand that the late Captain was a nephew of James Sutherland, of Her Majesty's ship Pallas, who distinguished himself in 1806 by cutting out the French Corvette La Tapageuse, off the coast of France, for which gallant conduct he was presented with a splendid gold-mounted sword, from the patriotic fund, at Lloyd's, London, and which is now in the possession of the family here.

Capt. Sutherland is the last of three brothers, all of whom met with a watery grave.

To show the esteem in which the deceased was held by those who served under him, we may mention, that, in 1854, when he retired from the command of the Magnet, the crew, some of whom had sailed with him for six or seven years, presented him with a testimonial of their regard.

In January, 1847, he was presented by an English stockholder, of the steamer Magnet, with a magnificent silver salver and other nine pieces. The salver bore the following inscription :—" This service was presented to Captain James Sutherland, of Hamilton, Canada West, by George Berry Torr, in acknowledgment of his services zealously and faithfully performed."

Captain Sutherland from his position as one of the oldest and most enterprizing of our steamboat Captains, was extensively known throughout the Province, and it is not venturing too much when we say, that wherever he was known, he was not only respected, he was loved. Frank, generous, manly, open-hearted, always ready to sympathize with the unfortunate and relieve the distressed, he was a fine sample of the British sailor, to which profession he was bred, having been almost cradled on the stormy seas which surround the home of his youth in the Northern part of his native land. The loss of such a man is itself a public calamity, for it leaves a gap in the social fabric which is not easily filled up. It will be a long time indeed before the memory of Captain Sutherland is forgotten by the public of Canada.

Captain Sutherland leaves a widow, three sons and one daughter to mourn his untimely loss. He was a kind husband and father, a friend to the poor, a firm patriot, and an unwavering friend. Peace to his ashes.

JOHN C, HENDERSON, OF HAMILTON.

The subjoined notice of Mr. J.Henderson, brother-in-law of C. J. Brydges, Esq., managing Director of the Great Western Railway, is from the Hamilton *Spectator :*

Mr. Henderson, whose melancholy death by the late railway accident we have already chronicled, was a native of Leicestershire, England. He was by profession a telegraphic engineer. For some years previous to his departure from his native country for Canada, he was principal assistant to Professor Airey of Greenwich Observatory.

His scientific attainments—especially in astronomy and mathematics—were of no ordinary character, and he had letters in his possession from the most distinguished scientific men in England attesting the fact. As a further proof of this, we may mention that shortly after his arrival in Canada he was offered by Professor Airey, the charge of the observatory in Australia, a position of great importance, and would have proved a lucrative one; but Mr. Henderson had determined to push his fortune in Canada, and consequently declined it. He arrived here in the summer of 1854, having been previously engaged to fill the office of chief clerk of the mechanical department of the Great Western Railway—the duties of which place he discharged with great ability up to the time of his resignation, which occurred in August last.

While in this position, his kind and amiable disposition won for him the respect of all who had any intercourse with him; by those under his charge he was held in the highest estimation, and among the mechanics—with whom his position frequently brought him in contact—he was an especial favorite, and none but those who have seen, can describe the consternation and grief which the news of his death produced amongst them.

On his resigning hii position in August last, the employees made it the occasion of presenting him with a beautiful service of silver in token of their regard for him. His object for leaving the company's employ was to become the agent, in Canada, of the Cyclops Iron Works, which position he held at the time of his death.

CHARLES BROWN, OF GALT.

The following brief reference to Mr. Charles Brown, of Galt, is from the Toronto *Globe*:

Among the sufferers in the late sad tragedy, the circumstances attending the decease of Mr. Charles Brown, merchant, of Galt, are striking and affecting. Mr. Brown and an elder brother had come to Toronto to make preparations for the funeral of their aged father, whose remains were sent to Toronto for interment, as the family had long lived in the City, and were about to make it the place of their permanent residence. Mr. Charles Brown arrived in Toronto on the fatal Thursday, and on that day at one o'clock the remains of his father were taken from the house of his relative, Mr. P. Brown, Church-street, to the Necropolis. About three o'clock he left his friend's house, although earnestly entreated to remain for the night. His anxiety to rejoin his sisters in Galt, who were mourning the loss of their father, was not to be overcome. Providentially, his brother resolved to remain till next day, or both would in all probability have lost their lives. Rumors reached their anxious relatives in Galt early on Friday, and for some time they believed that both brothers were gone. But "one was taken and the other left." He who was thus suddenly removed was not unprepared, for his life was for many years distinguished by the most ardent and unostentatious piety, accompanied by the most amiable temper and disposition. His life was indeed "hid with Christ in God," and we doubt not when the sudden summons came, he received it with joy, and was at once welcomed to the society and enjoyment of the blest, where his heart had long been. At the early age of 32 was this young Christian removed? His remains were removed to Toronto on Monday, and carried from the same house whence his venerable father had been taken four days before, and deposited in the same vault.

"Blessed are the dead who die in the Lord; yea, saith the spirit, they rest from their labour, and their works do follow them." But we are not of that class who think that the death of the distinguished and eminent ought alone to be recorded. There is one who has passed from amongst us, whose death has brought as poignant sorrow to a generous family, as if the greatest in the land had fallen. Well may we exclaim,—

Leaves have their time to fall,
And flowers to wither in the north wind's breath,
And stars to fade—but all
Thou hast all seasons for thine own, O Death!

JOHN MORLEY, OF THOROLD.

(From the Thorold Gazette.)

The death of our friend, Mr. John Morley, will be regretted by a large number of people in the counties of Lincoln and Welland. It is a serious loss to this village, where he resided for many years, and carried on extensive business as a plough manufacturer. He was a shrewd business man, of very temperate habits, and otherwise of unblemished moral character. He left home on the 9th inst., for the purpose of establishing agencies at Hamilton, Toronto, and other places for the sale of his celebrated ploughs, and had first made arrangements for manufacturing between $10,000 and $12,000 worth of ploughs before the beginning of May. He brought his plough to such a state of perfection recently, that there can be no doubt it excels all other ploughs manufactured in this country. Mr. Morley was for some years past a member of the council of Thorold, in which capacity he gained, not only the esteem of his brother Councillors, but of the public at large. He was born in Gaitsgill, near Carlisle, in the County of Cumberland, England, in which county his parents, two brothers and seven sisters at present reside. His third brother, George Morley, has resided with him in Thorold for some time past, and being an excellent mechanic, will carry on the business as heretofore.

Mr. Morley was 35 years of age, at the time of his decease. He has left a widow and four children to lament his melancholy death.

THOMAS BENSON, OF PORT HOPE.

(From the Port Hope Guide.)

The body of the late Mr. Benson was committed to the earth on Tuesday. The procession that followed the hearse to the grave was one of the largest — if not the largest—that ever accompanied the remains of a citizen of Port Hope to the house appointed for all living. At one o'clock every shop in town was closed. There was not the least hesitation manifested by any to comply with the expressed wish of the council, that no business be transacted from one till four p. m. Two o'clock was the hour appointed for the funeral. Before that time the sidewalks on both sides of Walton street were densely thronged from Cavan street to Brown street. The vast concourse consisted not alone of the residents of Port Hope. We noticed many persons from Cobourg, and the townships north and east and west of the town. A feeling of deep solemnity pervaded the multitude—each man spoke in bated breath. Mr. Benson was one of the most public spirited and prominent citizens of Port Hope. His death has created a void in our midst which will not be readily filled. Many years ago he was in the mercantile business in this town, but at the time of his death he was secretary and treasurer of the Port Hope, Lindsay, and Beaverton Railway.

RALPH WADE, OF COBOURG.

Unlike any previous disaster, the effects of the late railway calamity have been felt in every portion of our country. All Canada mourns. Our own section has not been unscathed. Poor Ralph Wade is no more. On Wednesday last a crowd of brother farmers assembled at the homestead, mourning the loss of one whose enterprise has raised the agricultural reputation of our county and the province. They met to perform the last sad funeral rites and offer their sympathetic condolence to his afflicted family. But they were not alone. Mechanics and merchants, and members of the learned professions assembled in great numbers, to show their respect for the deceased, and do honor to his memory. About two o'clock the mournful *cortege* began to move. Among the pall bearers were Sheriff Ruttan, Asa Burnham, Harris Burnham, Henry Jones, Nathan Choat, T. McMurty, and Alex. Alcorn Esquires. About 100 vehicles and a considerable number of horsemen followed to the place of interment, St. Peter's Church burying ground.

The numerous prizes which were won by our deceased friend sufficiently testify to his enterprise and skill. He obtained several prizes for grain at the World's Fair in Paris. He was a large importer of improved breeds of cattle and sheep, and no animal, township, county, or Provincial fair passed over without giving numerous prizes to Mr. Walde. Perhaps no agriculturist in the Province has won more laurels, and certainly none ever bore them with a more plain and unassuming demeanour. Of mild and unobtrusive manners, he interfered not with the affairs of others, but quietly pursued the even tenor of his way. As a consequence, his enemies were few and his friends numerous. To say that he had faults is only to acknowledge him human. Peace be to his ashes! He is gone, but his name, associated with the agricultural prosperity of our county and country, will long live after him.

REV. DR. HEISE, OF HAMILTON.

Respecting this very worthy gentleman, who was one of the victims of the late accident, Rev. John Butler of this city, furnishes the following brief sketch:—

My acquaintance with the late Rev. Doctor Heise, commenced in this country, about three years ago. Of his previous history I am almost entirely ignorant. He has told me that he emigrated from Germany, about eight or nine years since, to the United States, where he remained until 1854.

He was introduced to me as a teacher of German, which language I studied with him for some time. Shortly after I first knew him, he asked to come and board in my house. His request was complied with, and he remained a member of my family until he was so suddenly removed.

About a year and a half ago, Dr. Heise was ordained Deacon by the Bishop of Toronto, and was to have been soon admitted to Priest's orders.—He had been, I understood, a preacher among the Lutherans, in Philadelphia, and at some other places in the United States.

He was a man of good abilities, especially for language, and who had not neglected the improvement of his intellect. His manner was unpretending, simple and humble. He made many visits among the poor, as he used to call it, "*per pedes Apostolonim*," and on the whole was one who tried, in my opinion, to do his duty to God, and to his fellow-men.

The deceased was Doctor of Philosophy of Jena. He has left an aged mother in Germany, who was dependent on him for support; and for whom, if any should wish to subscribe I shall be happy to be the medium of communication.—John Butler.

MR. AND MRS. RUSSELL, OF BRANTFORD.

(From the Christian Messenger.)

The deeply affecting results of the late railroad catastrophe, do not appear in a more heart-moving form as regards the family desolations and bereavements caused thereby, than in the death of the two individuals mentioned above. They were in the very prime of life; had a young family of five dear children, the eldest under nine years of age; they were most happily united in conjugal affection; had passed through a season of peculiar anxiety, in reference to their temporal concerns; the threatening storm had passed over, and the clouds which had enveloped them were all dispersed; everything to human view seemed to be bright and cheering, promising years of usefulness and delightful enjoyment, when in a few short moments they were hurried away along with many other dear fellow-creatures, from everything earthly and all the endearments of life, by one dread crash of death.

John Russell, the husband, was a native of Ireland, and was born in the parish of Maghargell, in the county of Antrim, in the year 1822, where his father, James Russell, then resided. He came to Canada when a boy along with his father's family, who settled in the township of Esquesing.—When grown to be a young man, he left his father's house and came to live at Paris on the Grand River, along with a youthful associate, who now resides at Owen Sound. Not long afterwards he came to live at Brantford, where he had his home to the time of his death The deceased was always outwardly a friend to religion, of sober, steady and industrious habits, and attended regularly the house of God. But he neglected to seek the soul-saving and vital power of the gospel to which he had long listened, which is indispensably requisite in order to bring dying men to the footstool of mercy as humble supplicants to plead in a right manner, with earnest cries for pardon and acceptance with God through the precious blood of the Great Redeemer. God, who is rich in mercy, did not leave him, however, to perish in a state of undecided formalism, and under the decent guise of mere outward morality. During the gracious revival of religion, which took place in this town a year ago, John Russell, amongst many others, was led to experience a deep religious concern, and was taught to know that he was a vile sinner in the sight of God, and would inevitably perish if he did not "flee from the wrath to come."

Not long after this he joined the Congregational Church, became a useful and active member of the same, took the lead of worship in his family, which had previously been left to his partner in life, and walked before the world as a pious servant of God,

> "Not ashamed to own his Lord,
> Or to maintain his cause."

In his case we see how indescribably momentous this closing in with the overtures of mercy is to a dying man. A few more fleeting months spent in trifling with the affairs of salvation, and what would have been his fate and doom when he was precipitated into the chasm of death in a moment, and his soul called into eternity in such an awful sudden manner. "Blessed are the dead which die in the Lord. Yea, saith the Spirit, for they rest from their labors."

Ann Russell, the loving wife and dear mother, whose spirit was called away from earth the same moment with that of her beloved husband, and by the same sad occurrence, was born in the city of London, England, in the year 1827, and came to this country when she was very young along with her father's family, James Hearne, who has long resided in the village of Burford, now called Claremont, in the county of Brant. Ann Russell was a child of early convictions and prayer, and was often known to be deeply concerned for the salvation of her soul when yer quite young. Some time after her marriage, Mrs. Russell united with the Congregational Church, and filled her place as all church members ought to do—with punctual regularity. Years had rolled away, her husband had been brought to a saving knowledge of the truth, the sun of temporal prosperity had begun clearly to shine on every earthly concern, when lo! with the celerity of a passing moment she was called to meet death in the cold waters of the fatal canal, leaving children, and all earthly things for ever behind her.

REV. ALFRED BOOKER, OF HAMILTON.

Rev. Alfred Booker, Pastor of the Park street Baptist Church, Hamilton, was born at Nottingham, England, in the year 1800. He was converted in the year 1820, at the chapel of Ease, St. Mary's, Nottingham, and was ordained Pastor of the Baptist Church, at Paradise Place, a few years after.—He had charge of that church until his removal to Canada, which took place in the year 1842. After remaining in Montreal about 8 months, he removed to Hamilton in the spring of 1843, where he succeeded shortly after in organizing the regular Baptist Church, of which he remained Pastor until his death. During the whole of his ministrations in England, and for several years in Canada he received no remuneration for his services, depending for his support upon his own private means.

Among those who lost their lives by the recent awful catastrophe at the Desjardin Canal, none will be more missed than the subject of this brief sketch. In addition to his city charge, he had a congregation at Wellington Square, whom he supplied on a week day. Since the opening of the Toronto Railroad he had availed himself of it as a mode of conveyance—going down

Pamphlet
Binder
Gaylord Bros., Inc.

HE 2810 .G78 F9
Full details of the railway di
Stanford University Libraries

in the forenoon and returning in the evening—and it was while returning from a visit to that place that this terrible calamity occurred.

As a christian and a christian minister he was highly and deservedly esteemed by all who had the privilege of his acquaintance. His death will be a great and sore loss, not only to his own church and congregation, whom he had faithfully served for many years, but to the public generally, as he took an active and prominent part in all the great moral and benevolent movements of the day. From an intimate acquaintance with him for several years past we had formed a high estimate of his religious and moral worth. We have known but few men as sincerely and earnestly devoted to his Master's work, or who manifested the same interest in the progress of evangelical religion. His last pulpit labors on the Sabbath previous to his sudden and mysterious removal to another world, were characterized, we have been informed by a more than ordinary degree of earnestnesss and fervor, of deep and heartfelt anxiety for the salvation of his people. But it has pleased God, in a most mysterious manner, to remove him from amongst us; and of him it may be truly said, he "rests from his labors, and his works do follow him."

THE CORONER'S INQUEST.

First Day.—Friday, March 13*th*, 1857.

On Friday, the 13th of March, after the Coroners—H. B. Bull, Esq., and Dr. Rosebrugh—had completed their preliminary labors in examining and identifying the bodies, they proceeded to the Board Room of the Great Western Railway, where the following gentlemen were sworn in on the Jury:

James Osborne, Jos. Lister, John Moore, John Galbraith, Levi Beemer, Robert Roy, Jesse Nickerson, Thomas B. Harris, Robert Osborne, Wm. A. G. Kerr, Alex. Hamilton, Lewis R. Corbey, Chas. Magill, James McIntyre, Horatio Case, James Cummings.

James McIntyre was then elected foreman, and the Jury were directed to inquire how Donald Stuart and many others came to their death. They then proceeded to view the various bodies, and immediately afterwards adjourned till two o'clock on Saturday.

Second Day.—Saturday, March 14.

The jury met at the Court House, at 2 o'clock P. M. Coroners Rosebrugh, Bull and Jones, presiding. A great number of gentlemen were in attendance.

Mr. Stephen Richards, barrister, attended to watch the Inquest, on behalf of the Crown. His Honor Mayor Moore was likewise present, as were Thos. C. Keefer and J. F. Clarke, Esqs., civil engineers.

Richard F. Jessup sworn.—I am Travelling Auditor to the Great Western Railway Company, and have been in the Company's employ since August, 1854. I was on the train when the accident occurred. I was on the last car of the train. After we passed the switch, I felt an unusual motion, which induced me to look out and see what was the matter. I saw the conductor come out of the other car, and he seemed to be endeavoring to get the connection joint out, but as as he could not succeed, he leaped off. I leaped off as the car went over. The last truck of the hindmost car was left on the track; that car was held suspended for half a moment or so by the ring-bolt. There was no cry, nor any signal before the engine got on to the bridge; cannot say what was the cause of the accident, but think that the locomotive was not off the track before it reached the bridge. A brakeman was on the hind platform.

In answer to Mr. James Osborne—There was no bumping of wheels. I think I should have known if the locomotive or cars had been off the track.—There would have been a jerking feeling experienced. Have been on a train when it was off the track, and felt no such sensation now as then. Felt no stoppage till the engine must have been on the bridge. Heard the timbers of the bridge crashing before I got up. Don't know how the cars were bent, but observed that the rails were spread out, or bent. The speed, I imagine, would be from 5 to 8 miles an hour. I think a man could get on at that speed.—The switchman was at his post when I got off. Before coming to the switch, the usual signals were given, but heard no signal afterwards.

To Mr. Case—My opinion is, that the engine did not get off the track till it had reached the bridge.

To Mr. Richards—The baggage car was towards the bay ; saw two men crawl out of it while I looked at it ; it lay nearly east and west, somewhat obliquely. The passenger cars lay nearly crosswise ; could see a portion of the first car. The last car was nearly perpendicular, resting on the top of the wall.

To the Coroner—Did not wait to examine much, but came to the city for medical assistance ; jumped on a farmer's waggon on the road, after running up the bank and crossing the suspension bridge. Thinks that no portion of the second car was in the water ; did not examine closely.

To Mr. Magill—Cannot account why one side of the bridge was torn away more than the other.

To Mr. Gwynne—I believe that I should have known had one wheel of the engine been off the track.

Edward Levier (sworn,)—Am baggageman and was on the train when this accident happened. Was in the baggage car next to the engine and tender. It was the 4.10 or accommodation train ; we made all the stations on time. Henry Urquhart, the express-man, was with me in the baggage portion of the baggage-car. Was looking out of the door on the right-hand side when the train came up to the bridge. Noticed nothing wrong. Saw the switchman with a green flag in his hand, which signifies that "all is right—go on." Just as the engine got to the bridge, heard one sharp signal to put on the brakes, and with that I saw the engine sink through the bridge. Was sitting on the baggage close by the door. Heard the crashing of the bridge, and saw the engine-driver hold up both hands ; with that I leaped out, and lighted on the parapet of the bridge. Had just time to leap out and save myself.

In answer to Mr. James Roy—Was going at the usual low rate of speed.

To the Coroner—Saw the cars go over. The trucks of the last car were left on the track. Did not observe the engine strike the bridge ; it seemed to sink down through the bridge. Cannot say whether the engine was off the track or not. It did not strike me as being off the track. Felt no jolting. Did not see the locomotive deviate from the track. Was looking at it, and am sure it did not strike the side of the bridge.

To Mr. James Osborne—The first noise was the creaking of timbers.—Could see along the bridge. Just as the engine-driver whistled, the engine was going on to the bridge. Had told Mr. Muir that witness thought there was something wrong with the locomotive, or the engine-driver would not have whistled "on brakes." He whistled just as he went on the bridge.

To the Coroner—The entrance of the engine on the bridge and the whistle were simultaneous.

To Mr. Richards—Thinks the engine began to sink before the whole of it was on the bridge. The locomotive appeared to sink down by the forepart. Thinks all the locomotive, but not the tender, was on the bridge when it sank. Was not more than a foot from the edge of the wall when I jumped off. The bridge was broken about a month since, by the breaking of an axle of the locomotive, which broke up some 7 or 8 ties of the bridge. We changed cars for a day or so there, until the bridge had been mended.

To Mr. Nickerson—The marks on the ties where the bridge was broken before, were between the rails. Saw some fresh marks on Thursday last.

Pamphlet
Binder
Gaylord Bros., Inc.
HE2810
HE 2810 .G78 F9
Full details of the railway di
Stanford University Libraries

The marks on the ties must have been occasioned by the breaking of some portion of the locomotive.

Thomas Tribute.—Am switch-man and brakesman at the Desjardin's Junction ; was on duty when this accident occurred. When the signal was given, I opened the switch. The train came on. David Crombie, anothe-switchman, had got one foot on the steps, but did not get on as he observed the locomotive going down. He had gone about the length of a passenger car before he jumped off. Saw Barrett and Mr. Muir jump off, and knew something was wrong. Could not see the locomotive. When it passed me I did not observe anything was wrong. Saw a man come out to jump, but he went down with the car. Just as Mr. Muir jumped the hind car went over. The hind truck remained on the track. Heard no cracking, and saw nothing wrong, till all went over. From the switch to the bridge is about 70 or 71 feet : have been told so. It is usual to blow for "brakes on" "brakes off again." Heard one sharp whistle afterwards for brakes on, Could not see the locomotive, but should think that the whistle was given just as the locomotive got on the bridge. No. 3 freight train had passed down a little before, and in passing over it afterwards, I had examined the bridge, and found it all right. It was my duty to examine it after any train passed over it. When I went to look at the smash-up, some one must have turned my switch on the main line.—Near the telegraph office there was a bright mark, and further on a rail was bent, and the chair broken, as if the wheel had not been on the rail and then a part of the rail was cut off and two connecting rods of the switch were broken, as if the flange of the wheel had cut them through. One of the rods was dragged down the line.

To Mr. Richards,—I examined the bridge closely. Do so every time I go on duty, and also after the passage of each train. Spent about fifteen minutes each time. When the train came in, I was standing three feet west of the switch. Observed a jolting till it got to the bridge. The last car had passed me when the whistle blew. Could not see the locomotive. Saw my fellow-switchman try to get up on the hind platform. Am positive that all the train had passed me before the shrill whistle sounded. Saw both sides of the bridge after it passed me. Did not see the locomotive or cars deviate from the track. It was on the Toronto line where the marks of which I speak, were made.—The first was about the distance from the switch as where the inner rails cross each other. Saw a sort of scratch between the connecting rods of the switch.

To Mr. Gwynne,—Cannot say how long a time had elapsed after the freight train had passed. I was then in the house, and Crombie was at the switch. I had plenty of time to examine the bridge. I turned the switch when I heard the whistle, and Crombie was standing near me. The switch is always right for the main line and we have no right to open it until a Toronto train whistles. I am sure that the chain or chair was broken by that train. It could not be turned if broken.

David Crombie, sworn—Am bridge-tender and switchman at the Desjardin's Canal. Was on duty on Thursday afternoon. Goes on duty at seven o'clock in the morning, and generally leaves by the Toronto train. My proper time to leave is six o'clock at night, but my brother-switchman generally relieves me in time to ride home. The switch was adjusted for the Toronto train by him. I was near by, and got on the train as usual. It was going at a speed of about six or seven miles an hour. I experienced a jolt, and heard a sharp whistle at the same moment, and leaped off. I was only on the steps. I looked forward, and saw that the bridge and the engine were falling down. I called to out Mr. Muir and others to jump for their lives. Cannot say whether the engine was entirely on the bridge when it commenced falling. The hind truck was left on the rails. I think all the locomotive was over the bridge, but am not certain. The car was standing up against the wall and I went to get a rope to be let down into it, to rescue those inside. I examined the track the same night, and found that the rail Toronto wards of the switch was bent; there was a mark on the rods and on the chair in which the rail is set. The mark was on the middle ; it was of no consequence. One of the rods was cut right through. There were fresh marks on the ties up to the bridge, occasioned, I believe, by one of the truck-wheels getting off the track. My reason for thinking so is, that the same engine got damaged just at the same spot in June last, and then the same kind of marks were made, and the wheel came within about an inch of the adge of the timber on which the rail was fixed. At that time the train get over in safety, and the brakes were not whistled down till it got over.

To Mr. Robert Osborne.—Did not see the Engine Driver when the engine went down.

To Mr. Richards.—I was about 12 or 14 yards off the bridge when I jumped. The engine and tender went down together, and must have been on the bridge at the same moment. Tribute came on duty about six minutes before the Toronto train came. It was about ten minutes before that, that the freight train passed. I followed the freight train, and examined the bridge. Everything appeared to be right until the locomotive got to the bridge. Do not know whether Tribute examined the bridge or not. Two minutes were sufficient to make the examination. Had no instructions to make a minute examination. Tribute could not have spent many minutes. It was a heavy freight train of about fifteen or twenty cars, and drawn by a heavy English engine. There were marks made by a train in February, and others in June last, as if the wheels had been off the track. When freight train run off, twelve or fourteen ties and the corner part were broken. None of the stringers were injured. Believes no part of the bridge, which was injured on that occasion, but was taken away and replaced by new work. The vessel which struck the bridge last summer with her mast, made scarcely any observable mark on the east side of the bridge.

The Inquest was adjourned about seven p. m., to meet again on Tuesday at the Mechanics' Institute at eleven o'clock a. m.

Third Day.—Tuesday, March, 17.

The Jury met at the City Hall, at 2 o'clock, P. M.

Mr. Coroner BULL said as the wreck of the bridge had been taken out of the water, he would suggest that before proceeding to take the evidence, the Jurors would proceed to the scene of the disaster, and view the timbers of the bridge, which had been preserved. The Coroners and Jury then proceeded to the spot, with the understanding that they would proceed with the evidence on their return.

The Jury met again at 7 o'clock in the evening, to hear further evidence.

EDWIN RICHAARDSON. I am conductor on the Hamilton and Toronto branch. Was in Post Office car ; was asleep. The first shock that I felt was the floor giving away, and the breaking of timber, and felt the ashes from the stove flying about me, and the water rushing in. Was not acting as conductor. When the car fell down, I kicked the glass out of the window and got out, but could render no assistance, as my back was injured. After the excitement was somewhat over, I asked Crombie (the switchman) what was the cause of the accident, he said it was a loose wheel or sprung axle. I got a lamp and went out and examined the track, near the switch, and from that I tracked the wheel to the abutment of the bridge. My impression was that only one of the wheels was off. I believe that so long as the engine remained on the rails the bridge was perfectly safe, but even dividing the weight of the locomotive, that would have sufficient fall to break the timbers of the bridge. I have seen the timbers of the bridge, but they are not now as when they fell down. I tracked the marks on the left hand side up to the bridge. They were fresh marks. I always thought the bridge was safe, unless an engine got off the track.

To Mr. Richards.—The locomotive would break the cross pieces and fall through. The side pieces, too, would give way. There are five bearings to that engine.

To Mr. Cummings.—(Examining the diagram.) There was ice and snow there. The marks are now mostly trodden out.

Michael Duffey.—Am a breaksman on the Toronto and Hamilton road; have been such fourteen months. Was standing between the baggage and the first passenger cars, as the train passed the switch; I saw Crombie try to get on, but he did not seem to do so, and I heard a whistle to put on brakes. then turned my head and immediately jumped. Felt motion of the engine, driver had left off steam. This sensation was felt about the length of half a car after the whistle. Saw that the engine had gone and jumped, falling about four yards off the wall. When I looked round, all the cars had gone over. Don't recollect seeing any trucks on the track. Jumped off on the side next Dundas. It would take about a minute to run from the switch to the bridge. I supposed the whistle was to close up to permit Crombie to get on. Was going about six or seven miles an hour. The engineer whistled on brakes about the length of a car off the bridge. It was about the length of the engine, tender and baggage car from the switch when he whistled.

To Mr. Roy.—Sometimes I put on the brakes without being signalled, in case of crossings and bridges, or when the train was on a curve·

To Mr. Gwynne.— I think I had not come opposite the wall of the bridge.

To Mr. Richards.—Cannot say positively that the engine was not on the bridge when he heard the whistle.

Edward Barrett—Was conductor on the ill-fated train. Have been three years in the Company's service, and a little over a year as conductor. I was standing on the forward platform, on the hind car. Heard the whistle, and jumped, as I heard some one call out "jump!" I lit about half-way along the wall. I called to Mr. Muir, who jumped. So did Mr. Jessup, and another man tried to jump. The locomotive was about half-way between the switch and the bridge when I heard the whistle. Felt no unusual motion on the train. Have been on a locomotive when it ran off the track, but felt no jolting, running about twenty-five or thirty miles an hour. Was not now going more than eight miles an hour. The switch was all right. Saw the switchman with a green flag. Experienced no motion of the cars. Thinks something was wrong with the engine. or the bridge would not have given way, that is, if the engine were on the track. Examined the track immediately, and found that a piece of the rail had been cut off. It was about four inches long, and perhaps one-eighth of an inch thick.

To Mr. James Osborne.—Was not looking at the engine before I jumped. When I looked she was gone, and I could not see her.

To Mr. Richards—I jumped when I heard the cry. The whistle was a few seconds before. The crack and the cry were at the same time. Have but a poor recollection about it.

To Mr. Gwynne—The marks were fresh.

To the Coroner—The hind truck of the last car remained on the rails.

Wm. K. Muir—Is Assistant Superintendent of the Great Western Railway. Has been in the Company's service for three years and a half. Was on the train when the accident occurred. Was sitting on the last seat of the last car reading, on approaching the bridge. When the car which I was in was on the switch, felt a jerking motion. The engine had not then reached the bridge. Got up and opened the door. and saw Crombie, the switchman, holding up his hands, and heard him sing out to jump. Leaped off the platform, and landed on the bridge a few feet from the edge of the canal. When I had turned round, the engine and cars had all gone down. Thinks that one of the wheels of the locomotive was off the track, occasioned by the breaking of an axle. Has seen the bridge severely tested, and considers it perfectly safe. Never had any complaints made to him in relation to the unsafe condition of the bridge. Is quite satisfied that the passenger cars were on the track; thinks that the marks on the ties and rods were made by the broken wheel—does not think that they could have been made by any other part of the machinery.

At seven o'clock the Jury adjourned till Wednesday, to hear further evidence.

Fourth Day.—Wednesday, March 18.

The Jury met at seven o'clock in the evening at the City Hall, Coroners Bull and Rosebrugh presiding.

Diana House sworn.—I live on the Toronto side of the bridge, about 100 yards from the track, on the north side of the track near the edge of the lake. I was at home when the train came up. I saw it just as it was at the switch. I heard a noise soon after the locomotive passed the switch—a rumbling noise, not the usual noise of the train—that attracted my particular attention; I looked and instantly heard the whistle. I supposed at the time, and made the remark to my daughter, a girl of the age of 16, that the cars were off the track. The next I saw was the engine give a kind of a shake when it was just at the Toronto end of the stone work; the engine gave a quiver; I saw the engine plain till it went on the bridge; the masonry partly hid the engine from my view, but could see the smoke pipe very plainly; it was shaking; am certain of it; the cars all gave a shake; when the locomotive came to the bridge could see it quite plainly; when the fore part went on the bridge, the hind part tipped up and gave a shake, then it seemed to shoot on a little further; saw it break loose from the baggage-car; could see a space between them; the baggage car was just coming on the edge of the bridge; the engine was half way on the bridge when it canted; the front part of the engine went down first; did not see it fall against either side of the bridge; saw the baggage car go down as well as the rest of the train; noticed a man on the engine; saw him jump; this was when the locomotive commenced to tip; don't know whether it was the engineer or not; saw two men jump off the hind car; the baggage car whirled round towards our house; the first passenger car ran along, tipped up, and turned upside down; it turned over sideways—I thought so at the time; ran out to see if I could assist any one; that is all I could see; was in the house with the window closed.

William Scott deposed.—I am foreman of the track repairers from the bridge to near Dundas. My section includes the bridge; have been in that capacity since October last; have to go over the track twice every day; had been over twice on Thursday; the last time was about 4 o'clock in the afternoon; at that time the track and bridge were all right; have to see if the stringers of the bridge are closely "packed." I did so on Thursday; may have been ten minutes going across the bridge and back; have seen three locomotives go over the bridge together; they were drawing a heavy train; there was no crack; always considered the bridge safe.

James T. Sergeant said, I have formerly been Inspector of masonry, bridges, &c., on the Great Western Railway; left in October last, after being 5½ years in the company's employ; went to the scene of the late accident at about 7 o'clock; did not examine the marks until Tuesday. Some 18 or 20 months ago there were some additional floor-joists put in; it was supposed there was enough for the strength of the bridge; saw 2 engines running over the bridge together, before that time, and I noticed the track on the bridge settle slightly. At that time the longitudinal stringers were pine; afterwards they were of oak, I ordered the additional needle-pins in; It seemed to be stiff enough after that; saw nothing unsafe afterward; never made any report that the bridge was unsafe ; when the bridge was being put up I said it looked slight, and would not go over it before an engine had driven over. By the continual running of trains over the bridge it would become weaker, and if not looked after might become unsafe ; think the timbers were broken by a dead weight ; saw no marks of a blow strong enough to have carried the bridge down ; it may have been a sudden jerk, like the engine dropping down. While I had charge of the bridge, I went over it every day to see that the bolts were screwed tight ; Saw no mark on the ties as if the locomotive had fallen ; some bolts would often get loose—those thro' the end of the diagonal braces ; can't say how often ; it might happen once a week ; the reversing of an engine on the bridge might have an injurious effect upon it ; when I reported anything wrong, the Company always made everything right ; should think the marks on the ties looked very slight for a wheel running on them ; the quality of timber in the first ties was, in some of them, not so good as it might be. If the bridge had been made with stronger ties, and planked with 3 or 4 inch oak planks, it might possibly have sustained an engine falling off the track. I have been on other railways before ; I think the original braces and stringers in the bridge are too slight ; when the ties were broken about a month ago, I should think the structure of the bridge must have suffered ; every "rack" hurts a bridge of that kind.

To Mr. Richards.—I have been on a train when a locomotive has run off the track ; think the whole train would be shaken by such an event ; don't think the marks on the ties were caused by a locomotive ; if a locomotive had run off the track, it would have made a mark on the needle beams ; saw no mark such as would be made in that case ; the track may have spread, and the engine dropped through ; have observed where the ends were broken off ; one side broke at a splicing that is on the lake side ; the breakage was at about the centre of the splice ; there are three iron bolts through it. A bolt, driven in "snug," does not weaken the wood as much as a loose one ; think two bolts might have been sufficient ; Mr. J. T. Clark was engineer on the road when the bridge was built ; Mr. Whipple constructed it ; told him at the time the timbers were slight ; slight bridge requires more attention than a heavy one ; when I noticed the bridge bend, years ago, the cords did not bend ; have observed a crack in one of the needle beams, which looks like an old crack. My impression on seeing the remains of the bridge was, that it was broken by a dead weight ; if the needle beams had broken, some part of the cars would probably have been left ; think a heavier bridge might have been safer ; if a dooring had been built up even with the rail, strong enough, it would have been safer in my opinion than it is now.

Fifth Day—Thursday, March 19th.

The Jury met at seven o'clock, P. M.—the same coroners presiding.

WM. McKAY, deposed—am conductor of the freight train, No. 3, East, and No. 6, West ; have been in that capacity for 15 months ; have run most of the time between Hamilton and London ; have had charge of very heavy trains ; frequently I have had three engines, and once 36 loaded cars ; never had any suspicions as to the bridge on the canal ; never heard the bridge crack except on frosty mornings, when it sometimes cracked, like other wooden buildings ; passed over the bridge at 5 : 20 on the afternoon of the day on which the accident occurred ; did not hear it crack then, nor did I hear any one make such a remark ; there would never be three engines on the bridge at one time—only two ; we never go rapidly over the bridge ; it is up grade going west, and when going east, we have to stop at the junction ; I think, however, we may sometimes have passed the bridge at the rate of 13 or 14 miles an hour ; never felt any jarring upon the bridge. On Thursday last I stopped in Hamilton, and went to the scene of the accident ; saw marks as if made by the flange of a wheel, pretty clear to the rail ; the mark appeared fresh; have not examined the marks since; my impression that night was, that the engine was off the track. I have had an axle break when running a train. When an axle breaks, one of the wheels leans in first; the wheel that is slack on the rail generally goes off first, especially at a curve. We have no particular instructions respecting the Desjardin Bridge; we have no general instructions. When going into junctions, we are to have our trains at full command; if we see all is clear. I consider we are allowed to go directly in; never saw anything on the bridge to make me uneasy; never thought the bridge would be safe if the engine should run off the truck.

EDWARD HARDMAN was sworn—He said; am an engine-driver on the Great Western; I drive the engine Panther, have been driver for two years on the Great Western Railway, and altogether for upwards of four years; the Panther is a heavy engine—one of the heaviest. I drove No. 3 freight on Thursday, and went over the bridge at 5:20; heard nothing break on the bridge, and heard nobody say anything about such an occurrence; never heard any one say, that the bridge was unsafe—all the engine-drivers consider it safe; was working for three years in the shop before I drove; a regular apprenticeship to the business is seven years. I know something about the construction of locomotives; was at the bridge on Thursday, ten minutes after the accident. I went to the other side of it the next morning at nine o'clock; think the marks were fresh, for there was a blue mark on the rails not rusted over, as if the flange of a wheel had been travelling on the rail. I don't think a car wheel would have made such an impression; the mark was on the lake side of the track, on the land side of the rail. I am almost sure it was a new mark; did not trace it much beyond the switch; our heavy engines make very slight marks on frosty ground; have seen one of the track wheels loose or broken. It might get off the rail, but not very well off the engine; have seen engine wheels keep the track with a bent axle; a slight axle would cause slight marks similar to those I observed on Thursday. I have known a heavier engine than the Oxford, with all the wheels off the track, make slighter marks than those made on Thursday night; if a bridge gives when we pass over it, we can easily discern it; I don't think the truck wheels of the Oxford were heavy enough to make the impressions visible: think the trail wheel of the engine made the mark on the rail, switch, road, &c. hTat would have thrown the engine off directly the wheel dropped.

RICHARD BOND deposed—I am Inspector of Bridges on the eastern division of the Great Western Railroad from Suspension Bridge to Woodstock; have been in that capacity since October last; was inspector of station buildings on Toronto line before that; have been connected with railways for 20 years; consider myself able to judge when a bridge is right or wrong; examined the bridge about a fortnight or three weeks before the accident; it was all right; always considered the bridge a safe one, and am aware of no report ever having been made that the bridge was not safe; was in Hamilton on Thursday last, went to the bridge directly on hearing of the accident;—found the marks on the track where either an engine or tender had been off the track; found a rail bent—a piece of iron shaved off—and a connecting-rod broken; these marks were perfectly fresh; I swear to that positively; that was about 6 p. m., on Thursday; thought at that time the engine had gone off the track before it reached the bridge. There was an eccentric rod just at the extreme end of the bridge, running across the track, in the stringers, under the rails; that was cut; the rod is about 1½ inch round iron; it is broken off close; think the locomotive or tender must have struck the lattice-work next Dundas; think the engine would clear out the beams as it went along, damaging the lattices, and then carry down the cars; the lattices are broken higher up on the Dundas side than on the other, therefore I think, the cords on that side went first; if the engine had struck the sides of the bridge, it might afterwards have tumbled over and made the mark it has done—(stove-pipe mark.)

To Mr. Richards.—I do sometimes make a report of bridges to an engineer; expect the chief responsibility rests upon me; had the charge of such works as bridges; planned a bridge at Grimsby, England, across the entrance to the Grimsby Dock; that was a railway bridge, but no locomotives ran over it; don't know of an engineer having inspected that bridge; searched the cords of the bridge carefully after the February accident; looked at the trestle work carefully, several times, more than ten minutes each time; swear every bolt was right, and that I saw no split in the siding; saw no split at the splicing; there might be a sun check; should take no notice of that; would not be certain whether there was an old check or not; don't recollect any check or split any where along the bridge; think the ends are broken a short distance from the "scarf," but I did not examine it closely, not so closely as I did in February.

The Jury adjourned at half-past 11 o'clock, to meet again on Monday, at 2, p. m.

Sixth Day.—Monday, March 23.

The Jury met at the City Hall at 2 o'clock P. M., and the preparations for raising the submerged locomotive having been completed, proceeded, in company with the members of the City Council, to the bridge, to view the proceedings. Over a thousand persons were present, among whom were the Hon. Mr. Killaly, Assistant Commissioner Board of Works, of Toronto, J. F. Clarke, Esq., Chief Engineer State of New York, T. C. Keefer, Esq., Civil Engineer, and members of the press from Toronto and Hamilton.

The locomotive was raised with pullies and derricks on the top of the water and showed the forward truck wheel of the engine on the right side broken off. From the posture of the engine as it lay on the bottom of the canal on its side, it seems quite impossible that the wheel was broken by the fall, everyting goes to show that the axle was broken, either on the bridge or very near it, and the breaking of the bridge was from the concussion which ensued. The bridge was tested with three heavy English engines attached, and there was not the slightest vibration perceivable. It seemed remarkably strong.

Seventh Day.—Tuesday, March 24.

At 2 o'clock, p. m., the Jury assembled at the City Hall. The first witness examined was one of the surviving passengers.

Mr. J. K. Clare—was in the first car of the fatal train; is a dry goods merchant in Hamilton; was in the first car of the train on the day of the accident; felt a jerk and heard a whistle of the locomotive at the same time; then felt a second jerk, and at the same time felt the car falling; sat about three seats from the stove; thought we were pretty much near the bridge; all I remember of what happened in the car was one loud scream as we went down; could not say that any one got out; had my child on my knee; could not say in what way we were going down; only felt as if I had dropped down straight from some high place; when the car began to go down I was in my seat, three seats from the stove, and the next thing I remember was, I felt myself in a heap of rubbish two seats from where the stove stood, and towards the engine; could not say what was the cause of the accident; my opinion is that the locomotive was on the bridge when I heard the first whistle till the time I felt the next shock was scarcely an instant; and then I felt we were falling down; my opinion was that we were going faster that time than we had ever gone before; could not say how many miles an hour we were going; had not previously to this moment ever felt a similar sensation.

in travelling by a train; felt no unpleasant sensation before I felt a jerk; was not aware of anything being wrong till I felt the first jerk. When I became conscious after the fall, I felt a stove upon me, and at the same moment I felt for my child ; I looked along the car but could see no one ; half of my body was in water ; got out through one of the windows and felt something give way under me, which I then believed to be the bodies of those thrown to the end of the car ; could not see any seats, and do not know where they were ; saw Capt. Sutherland, Mr. Duffield and Adam Ferrie, the latter was three seats back of me ; Duffield sat one from the stove ; Capt. Sutherland farther down in the car ; that is all I know of the accident.

To Mr. Richards—am of opinion the first jerk was when the engine fell and pulled the baggage car down, the second one was when that car snatched our car over ; before this, the cars had gone along qhite smooth ; if the locomotive had been off the track, the train could not have run so smooth ; the reason of my thinking we were going fast was from my looking at objects through the window.

W. R. Marshall—I reside in Woodstock, am a dry goods merchant in that place ; was in the Toronto train on Thursday the 12th ; was in the last car ; sat four seats back, on the side next the lake ; was looking out of the window and could see Hamilton, and the first feeling of a peculiar nature I felt, was an oscillation of the car, and from the time I felt that sensation to the time I went over, was a very short time. The passengers were all very much alarmed, (and I also became much alarmed,) and were running about from place to place ; this was just before I heard the whistle that this oscillation took place, and in half a minute we were down ; could not tell where, and from that time I cannot remember anything ; when the oscillation took place, and the passengers became alarmed, I requested them to keep still ; we were going very slow, about 5 or 6 miles an hour ; I am in the habit of travelling a good deal in the cars ; I judged we were coming to some place from the slackening of our speed ; it did not strike me that we were travelling fast ; thought we were going very easy ; it was shortly after feeling the oscillation of the car that we went down ; did not make an attempt to get out ; fell from one end of the car to the other ; did not think that the locomotive was off the track.

Anthony Sherwood—Is a civil engineer ; is at present engaged on the Buffalo, Brantford and Goderich Railroad, and has been engaged with Mr. Lock, C. E., at Southampton. Was also engaged on the Lancashire & Carlisle Railway as assistant engineer ; has been about a year on a Spanish railroad ; was engineer there ; came to Hamilton some 10 months ago ; was engaged for a short time in the mechanical department of the G. W. R ; from seeing a train pass over that bridge, I made an examination ; calculated that it would bear about three times the strain that was ordinarily put upon railroad bridges ; merely measured the timber, but did not look as to the quality of the timber ; it was about nine months ago that I made this examination and calculation.

A written statement of the examination made by Mr. Sherwood, was then read.

To Coroner—I have examined the renewed bridge ; there are a few more needle beams than are in the plan from which I have made that calculation ; the scarfs too are joined rather different in the new bridge, and this would add to its strength.

To a Juror—If the bridge had been planked it would have distributed the weight, but did not think a single plank would have kept it from falling through, or it would have turned off through the lattice work. No wooden bridge could have stood the amount of impact of such a shock as the fall of the "Oxford."

To a Juryman—Have seen them composed of wood and iron; the usual way is to put iron girders and plank across, but in such cases the trains have been known to break through upon such a train. The only sure way to avoid them would be to stop the engine and go over slow.

To Mr. Richards—By the term impact I mean a striking; 18 tons falling a foot and going at 7 miles, would produce a force of 380 tons—it would leave a mark when it would so fall; it would cut the beams right through; a freight car would strike with a force of 190 tons or one half; it would not make a scratch, but would cut or crush right through them.

To Mr. Richards—I did not observe any brashy timber there, nor any that was decayed. I saw some that were cracked, but thought they may have broken by the blow. The lattices may have been made of medium qualities of timber. A bridge of this kind is not likely to be impaired in three years, it may in five years.

To Mr. Beecher—The calculation as to the relative strength of oak and pine is, pine 90 to 112. Canadian oak and common pine, seasoned, is preferred to oak. I do not think it would have been desirable to use oak for those needle beams. In England it is calculated 125 tons would break a bridge. It is considered 2½ is sufficient. The Desjardin bridge I calculate 4¼ to 1, which would give 3¼ above required strength. I have looked at this bridge scientifically. I know nothing of the state of the timber. From what I know of the bridge, that weight as a dead weight could not have broken it. If it could, no bridge in the world is safe. Mr. Brunell has said that where a short bridge was dangerous he would rather go over quick than slow. There was less deflection when the trial was made yesterday, when the trains went over rapidly, than when taken over slowly. I consider the accident occurred from the broken wheel. Had the engine come up whole, I should be at a loss to know how the bridge had broken.

The Jury adjourned at six o'clock to meet again at eight o'clock. The first witness examined upon their re-assembling was

ANDREW TALCOTT. who said—I reside in Cincinnati, Ohio, and am a civil engineer. I am Chief engineer and superintendent of the Ohio and Mississippi Railroad. I was, before that, on the Richmond and Danville railroad, Virginia, as chief engineer for eight years. I have been in Hamilton since this morning. I have made an examination of the fragments of the bridge and of the engine. I have drawn up a paper embodying my views. It is as follows:—

From this examination I am of opinion there was no lack of strength in the bridge for the safe transit of the heaviest trains. This conclusion is arrived at from a calculation of the strength of the transits; for assuming but 8000lbs per square inch for the tensile strength of the timbers on the bridge, I find the lower chords should bear a load of 272 tons, the main tension braces each 60 tons each, and the counter braces each about 30½ tons gross.

The greatest weight that would be brought on the bridge by coupling two of the Company's heaviest engines, it is believed, could not exceed 72 tons; but to get this weight upon the bridge it must be distributed over its entire length, and consequently be equally borne by the main four braces, which gives a load of 18 tons, which is only 3-10ths of the nominal strength; the counter braces being 8 in number, and each affording about one-half the resistance of the main braces, are loaded in about the same ratio of their strengths.

It might be shown that the upper chord floor beams, and track stringers, were as strong in proportion, and consequently, that the structure was capable of bearing over three times the weight of any train that could be put upon it, which leaves as large a margin for casualities as will be found in a very great proportion of the railroad bridges in the United States.

I thought proper to state what load the bridge would carry, because I find in the mind of the public an impression that this bridge had not sufficient strength to bear an ordinary train. My examination on the ground showed clearly, to my mind, that the cause of the accident was the breaking of the axle, and displacement of a wheel before the engine touched the bridge.

This estimate is calculated on taking the thickness of the chords at their weakest point—allowing for the bolt holes and scarfing, although that is not the point at which there is the greatest tension.

To Mr. Richards.—If 136 tons were put on the centre of the bridge, it would bear it; if distributed, the bridge would bear 272 tons. That is the strength of the chords—not the floor beams: have assumed the truss to be 17 feet in height, the length of the bridge 72 feet; took the minimum section of the timber; the bolts do not reduce the tensile strength in greater proportion than that of the timber cut away; a piece of timber 12 inches broad, with a 4 inch bolt hole in the centre is stronger than an eight inch piece, as to its power to withstand a train; near the splice was not the weakest part, because it was not in the centre; if the bridge is shorter than I assumed, it is stronger than I calculated. I examined the axle of the engine; found the fracture smoothed down, as if it had run some distance in that state; have seen an engine on the track that made no deeper impression than those on the rail; my impression on examining the timbers was, that the cowcatcher had pitched forward and cut them; the locomotive would have cut through everything it touched.

To Mr. Beecher.—My whole life has been passed in engineering; was educated at West Point; was for 18 years a military engineer—and for 20 years a civil engineer; saw nothing in the timbers to cause the accident; have no doubt in my own mind, and there can be none in that of any well informed man as to the cause of the accident; some time last winter a "How" bridge, with an arch, in the Indianapolis and Cincinnati railroad, was cut through by a car running off the track; don't know a single bridge in America that would stand when such a force of impact should come in contact with it; am sure the axle was not broken by a fall—it is not quite fresh, but a little smoothed by friction. If the ties of the bridge had been made of oak, it would not have strengthened it, in fact I think pine was better.

To Mr. Richards.—I saw no decayed timbers.

Wintess here narrated a case in which a wheel had run for miles, after the axle had broken in the journal, and beam rubbed quite smooth.

To a Juror.—It might be better for the switch to be a little further away from the bridge, if practicable.

To another Juror.—It is not certain, by any means, that the defect could have been discovered if the train had stopped before coming to the bridge.

WILLIAM GARRICK sworn, said—I am a carpenter; served a 5 years' apprenticeship, about 18 years ago, and have been employed as a carpenter ever since; am in the employ of the Great Western as foreman in repairing bridges and culverts; have been foreman of the repairs of the Desjardin bridge; put 12 needle beams into the bridge in August last; that was "extra," not repairs; after the accident in February last, I put in 17 beams; 11 had been broken, and 6 others chipped; only one of the braces was broken; that was on the Hamilton side of the Canal, and was repaired; many of the bolts in the lattice-work were loose; was in the first passenger car when it went down; was at the front, four or five seats from the end, on the lake side; the first thing I knew that was wrong, after the whistle blew, was the car taking two jerks ahead; looked out of the end window, and saw the end of the masonry on the Dundas side; had got on my feet to look; thought the engine was at the end of the bridge; There was but a very short time between the two jerks; sat down on the seat when I felt the car tip; the car went down over the abut ment and turned a somerset, I think, end over end; when the car fell, I found myself in the water; was not much hurt. Some men may have fallen upon me; can't say what happened during the turning of the cars; got out through the window; was hauled up with a rope, and went into Tribute's house; was not able to examine the track for eight days after.

To Mr. Richards.—The timbers I replaced were mostly towards the Toronto side of the bridge; the first one or two were not much injured; some were passed over by the car wheels, and only chipped. The car was completely on the bridge before it stopped; as a general rule; I examine the bridge once a-month; at the Toronto end of the bridge there was one needle beam left in, which was injured by the February accident.

To Mr. Beecher.—A good job was made of the bridge—it was made as strong as it was before; the bridge was inspected again five or six days after that; the weight of the locomotive and train could not have broken the bridge, keeping on the rails.

The Jury then adjourned at 11 o'clock.

Eighth Day.—Wednesday, March 25.

The Coroners and Jury met at the City Hall at 2 o'clock, p.m., and were to proceed to the Desjardin Canal to make a more thorough examination of the injuries the locomotive had received, but in the meantime information arrived that the chains by which the engine had been suspended had given way, and that the "*Oxford*" was again submerged in the canal. It was then arranged that the examination of the swing-bridge, across the Welland Canal, built upon the same principle as the one at which the unfortunate catastrophe had occurred, be made. A special train having been placed at their disposal by the Railway Company, the Jury, in company with the members of the Press, and several engineers, proceeded to Thorold to inspect the bridge. By such inspection it was believed they would be satisfied as to the strength of bridges so construcetd. The examination having been made, the jury returned to Hamilton, and adjourned to 7 p. m., Thursday.

Ninth Day.—Thursday, March 26.

The Jury met at 8 o'clock in the City Hall.

MR. WHIPPLE of Albany was first examined; he said, I am a civil engineer, and have been engaged in that occupation for 25 years; I have devoted more attention to the subject of bridge building than to any other branch. I have been engaged in that business for 15 years; have bridged the New York State Canals; have built mostly iron bridges; have built but few railway bridges; have built four or five for the New York and Erie railroad; built the Desjardin bridge, and the Welland Canal bridge; have methods of calculating the strength of bridges, different for each kind of bridges; generally proportion timbers according to their strength; have examined the Desjardin Canal Bridge since the accident, and have drawn up a set of statements concerning it; these were as follows:—

"I have examined the draw or swing bridge over the Desjardin Canal, on the Great Western Railway, with a view of ascertaining its strength and condition as to general safety, and fitness for the purpose for which it has been employed, as well as the cause and manner of the casualty, by which about forty feet of the lower part of the structure from the northerly end was broken out, as I am informed, on the 12th instant, allowing a train consisting of a locomotive, with its tender, a baggage and two passenger cars to fall from a height of forty or fifty feet into the canal below. Not having had an opportunity of viewing the scene of the catastrophe till about a week after its occurrence, when considerable changes had been made in the condition of things, my judgment must necessarily be made up from a consideration of the nature of materials, principles and proportion employed in the construction of the bridge, and the condition and appearance of the broken and unbroken parts of the structure, and other connected objects I have seen there since the accident. The superstructure of the bridge was built by me for the Great Western Railway Company, in the year 1853, and as I am informed and believe, has been in use from the time the section of the road on which it is located was first brought into use, till the time of the late accident. It was constructed in accordance with a plan designed and arranged by me, at the instance of J. T. Clarke, Esq., of the Great Western Railway—the instructions being to make the primary and paramount object to consist in the safety and sufficiency of the structure, as to strength, with as great a degree of attention to the ease and convenience of working it as a draw-bridge as might be consistent with the more important consideration of strength and stability as a bridge for railroad purposes. The plan and specifications having been submitted and adopted, a contract had been entered into for the construction of the bridge. together with another of the same kind to cross the Welland Canal near Thorold, which was also built in the same season, and has been in use ever since the opening of that section of the road, a period of about three and a half years. Now, although the fact that those two bridges have sustained a heavy railroad traffic for between three and four years, without exhibiting indications of a want of stability can scarcely be regarded otherwise than as strong evidence in favour of their fitness for their intended purpose, especially since they form two instances with like results, without any of an opposite character to balance or neutralize—still it is not in my estimation evidence sufficient to justify the conclusion that they are unexceptionable and fully reliable structures. Before I can be satisfied as to the stability of a structure, I must not only know that it has endured a certain length of time, and been exposed to certain tests, but I must also have evidence that the materials contained in it, are not exposed to the action of forces to which similar materials have sometimes yielded.

For instance, having from the best available evidence arrived at the conclusion that a certain material is safe and reliable under a certain stress, and of doubtful reliability, under a great stress—if I find a structure in which that material is exposed to a stress that has been regarded as of doubtful safety, I cannot affirm or have full confidence in such structure, because it has in one or any moderate number of instances, endured severe usage and trying tests. That structure is alone worthy of confidence which exhibits a quality of material and proportions of parts from which stability might be reasonably inferred without the test of usage, and then if the test of usage sustains the deductions of theory and calculations, we might fairly rely on the safety of such a work, with as much confidence as human affairs are ever entitled to. I propose to explain briefly the principles on which the bridge in question was planned and proportioned, to aid in the formation of a judgment as to its safety and reasonable claims to confidence. The trusses which constitute the ultimate supporting power of the structure, are composed of upper and lower parallel and horizontal chords or stringers, connected by a system of diagonal pieces forming a lattice work between the chords, with no vertical pieces except at the end. This form of trussing (chords and diagonals without verticals) has been theoretically demonstrated, I think beyond reasonable dispute, to combine strength with lightness. to a greater degree than any other form in use, and consequently is the best adapted to the construction of a draw bridge. Having fixed on a form of trussing, the next thing was to manage the general proportion—i. e. the depth of truss, and the number and length of panels. The importance of tying and bracing the upper chords to preserve them on line, as well as to maintain the trusses in their proper vertical position, required the trusses to be high enough to allow the upper work to clear the smoke pipes of locomotives; and of such height as was sufficient to give the truss that rigidity required to prevent sagging or drooping off the ends during the swinging of the bridge upon its turn table, the adopted height of

Binder
lord Bros., Inc.
HE 2810 .G78 F9
Full details of the railway di
Stanford University Libraries

about 18 feet naturally suggested itself. The lengths of panels followed from the propriety of having the chords supported once in 8 or 10 feet, and it was readily decided, to form a panel of 16 feet over the turn table, with 8 panels of about 9 feet for the longer, and 4 of the same length for the shorter arm; the lattice work being arranged as for two stretches of bridge—one running from the turn table across the canal, and the other to the heel abutment on the land, to be loaded as a counterpoise to the long arm of the bridge—the upper and lower chords being extended continuously across the turn table to connect the two. The general arrangement of the truss being decided on, the next object for consideration was to determine suitable sizes and proportions for the several parts or pieces of which the truss was to be composed. This required a consideration of the strength of the material to be used in the several parts, with the kind and amount of stress to which each was liable to be subjected. White Pine, principally, is the timber used in the structure under consideration. The ability of this material to resist the force tending to break or destroy it, varies according to the manner in which the forces are applied. Experiments have shown that to break a piece of sound pine timber by tension, requires a force sometimes as great as ten or eleven thousand pounds to the square inch of cross section, and that it will very rarely yield to a force of less than five or six thousand. I have, therefore, adopted the rule that it is safe to employ white pine where its greatest legitimate stress or tension cannot exceed one thousand pounds to the square inch. The force required to crush pine in the direction of its fibres, is not so great, ordinarily, as that required to pull it asunder—being 5 or 6 thousand pounds, or upwards, to the square inch. I have, therefore, concluded that, in very short pieces, it is safely reliable under a pressure from end to end of 1000 lbs to the square inch of section, or 500 lbs to the inch for pieces of lengths not exceeding eighteen or twenty times the least diameter. To a force pressing on pine timber in a direction perpendicular to its fibres, it will not yield injuriously with less than 250 lbs. to the square inch. If the pressure extend over the whole surface, and if the pressure extend to only a small part of the length and breadth of the timber, it may be increased without bad effects, to twice that amount; for instance, a washer under the head or nut of a bolt, acting on pine, should cover two square inches for every 1000 lbs. of tension to which the bolt is liable, to prevent its being drawn injuriously into the wood. There are also some parts of a timber structure, which depend for stability on the power of the timber to resist cleavage; for instance, in order to expose a piece of wood to a severe tensile strain, it is necessary to cut off a portion of its fibres, to form a heading for the tensile force to act against in a position reversed from the end. This heading should have a square inch for each 1000 lbs. of force, in order to resist properly the pressure upon the ends of the severed fibres, and it must be at a sufficient distance from the end to prevent the head being split and thrust off. To produce this effect (of splitting,) on sound straight grained pine, requires a force of about 600 lbs. to the square inch of cleavage. Hence I conclude it to be safe to rely on such timber under a force of one hundred pounds to the inch, tending to produce cleavage in that manner. Consequently, I always take care that the heading have a distance from the end of the stick, at least equal to ten times the depth of heading. In case, however, of the heading or connexion being made by a hole through the stick near the end, it requires two cleavages to force out the part between the hole and the end, and the hole should be at a distance from the end at least five times as great as the diameter of the hole, and with the bearing on round pins or bolts, which press outward, to some extent, as well as toward the end, it is proper to give an extent beyond the hole, equal to about seven times the diameter of the pin. With these facts as the safe and reliable powers of the material to resist the action of the several kinds of force to which it may be exposed and a diagram exhibiting the several parts of the bridge truss proposed to be formed, and the amount of tensile and thrust action to which each part may be liable in the usage for which it is designed, carefully calculated and marked on the parts respectively, it was easy to proportion the particular parts and pieces of the structure so as to enable all to perform their functions with about the same ease, safety and certainty, without lumbering it with useless weight in unimportant parts, serving only to impair its convenience as a moveable structure, and exhaust a valuable portion of its supporting power which otherwise might answer useful purposes. In the annexed diagram I have shewn the arrangement of the parts of the long arm of the truss, forming the span from the turn-table to the abutment across the canal; and considering this as a simple span of the bridge truss, disconnected with the heel-end of structure, and supposing it to be loaded with 12,000 lbs to each pannel, applied successively at the points *a*, *b*, *c* and *d*, to be equivalent to a load of one net to the running foot on the whole bridge in addition to the weight of the structure, the elementary principles of statistics enable us readily to deduce the kind and amount of action which would thereby result to each part respectively. These actions I have computed and marked in pounds on the lines of the diagram representing the respective parts, (neglecting small fractions) prefixing the positive sign to numbers denoting tension, and the negative sign to those denoting thrust or compression in the same, manner as was done previously to the original proportionment of the structure under consideration. These preliminary explanations of the principles and computations presented are correct as I feel well assured they are, and should aid greatly in enabling an intelligent judgment to be formed as to the strength and reliability of the bridge in question, as far as it regards the supporting power of the trusses. I propose now to refer briefly to the parts of the truss, and point out the reasons whence I infer the sufficiency of each particular part for the labour required of of it, as well as the general safety of, and sufficiency of, the structure as a whole. The bottom chord in the centre is marked at a tension of 39,000 lbs for a distributed load of 72,000 lbs in addition to 24,000 lbs assumed weight of structure—or a gross load of 96,000 pounds to a truss. The cross section is 120 square inches, and allowing one half to be lost at the splicings, we have 60 available inches of unbroken fifres, capable of sustaining before rupture at least ten times the maximum stress produced by the greatest ordinary loads, and being 50 per cent. more section than is required by the safe estimate of one square inch to each 1000 lbs. The top chords have the same section of 120 square inches, safe at 500 lbs to the inch, or at a thrust of 60,000 lbs—being about ten per cent. more than the greatest thrust marked for the top chord on the diagram, which is 51,000 lbs. The diagonals S B and S C are each marked about 17,000 lbs, and have a cross section available for tension, exceeding 24 square inches; being about 40 per cent more than safety requires. They have also 17 square inches section of fibres cut by the bolt holes, giving one square inch bearing of bolt surface on the ends of fibres for each 1000 lbs of pressure, which amount of pressure the wood can bear without danger of crushing. The next diagonal R D has about 16 square inches of cut fibres for bearing, and 26 inches of uncut fibres to sustain 1,2000 lbs of tension upon the piece both in considerable excess. Diagonal P F suffers a tension of 7,345 lbs in one condition of the load, viz: when the point F is full loaded, and the point B unloaded. A thrust of 2,115 lbs with B full loaded and F unloaded, and tension equal to the difference of these numbers, or 4,230 lbs with both points loaded. This piece is single at the upper end, with a section of about 9 inches of cut, and 12 inches of uncut fibres, and the lower end double, and composed of 2 pieces 3¼ by 6 inches.—The single upper part lapping between the double lower part, with two one inch bolts and a one inch pin passing through, giving 19¼ square inches of bolt and pin, bearing in the single part of the splice, with nearly the same at the upper end connection, and more at the lower, being considerably in excess throughout. The diagonal O G is double, being composed of two 3¼ by 6 in. pieces. At the upper end, where it connects with its opposite O C and the upper chord, the two pairs cross and lock with one another, I believe with bolts of one-fourth inch diameter, leaving an uncut cross-section for each pair, equal to 12 square inches; each pair of these diagonals (O G and O C) suffer 4,230 lbs of tension and thrust alternately, according as either of the points G or C, is loaded singly, while with both those points full loaded, the tendency of the weight at one point just neutralizes that of the weight at the other point, leaving those diagonals without action, except what is due to the weight of the structure itself. The next diagonal N H composed of 2 pieces, 3¼ by 6 inches, suffers 6,345 lbs. thrust, only 162 lb. to the square inch, with D loaded, and N unloaded, a tension of 2,115 lbs with the load reversed, and a thrust of 4,230 lbs. with both these points full loaded, with the assumed load of 12,000 lbs, to each. The diagonal M I has a thrust of 8,460 lbs. on 30 square inches of cross section, or 213 lbs to the square inch, with bearing surface largely in excess at both ends. Diagonal L I, same sized pieces as the two last mentioned, has a thrust of 260 lbs to the square inch, being an aggregate of 10,125 lbs, with a large excess of bearing surface at the ends. In the end posts we have 77 square inches for a thrust of 27,000 lbs, or 1 inch to each 350 lbs; and when we consider the free unsupported length of these posts, equal to some 31 times the least diameter, although it is fully within the limit of safety, there seems to be as small an excess of strength above the safe limit in these posts, as in any part of the whole truss, if they do not actually constitute the weakest part of the whole bridge. I have now alluded to each part of the truss in detail, and shown for the weakest part of each piece of timber an actual maximum stress under the greatest load to which the structure is liable in any legitimate usage, in all cases less than one-sixth part of the actual breaking stress of that kind of timber of average quality, and in nearly all of the pieces very considerably less. It follows then, that if we were to assume a distributed load six times as great as was assumed above, to wit: six times 96,000 to the truss, equal 576 net tons to the two trusses, or 552 tons over and above the weight of superstruction, calculation would show in no single piece of timber (in the trusses) a stress approaching by a considerable amount the actual breaking stress of the material as determined by careful and repeated experiment, I therefore conclude that the breaking of the two trusses by a fairly distributed load 550 net tons, acting by dead pressure, could not reasonably be predicted, except by supposing a quality of material, considerably inferior to the average quality of its kind. If this conclusion be correct, and to me it seems unavoidable, the sufficiency of strength in the trusses is fully established. To break one of these 7 by 14 floor beams, by a weight on the track rails, would require 33 net tons, while the legitimate service required of them, before the insertion of the extras, was about 5 tons to each beam, or one-sixth of the breaking weight. This load might produce an objectionable deflection, but not an unsafe or an injurious strain. The bolts sustaining the beams are 1⅜ in. iron, containing over one square inch of cross section, deducting the part cut away in joining the screw thread, are good for 10,000 lbs each, would be injured by twice that amount of fair stress, or broken with less than 50 or 60 thousand pounds. If, instead of the addition of extra beams, the originals had been replaced by large ones, in the same positions, the effect would have been better, as bringing the weight higher to the supported points of the lower chord, consequently diminishing the transverse stress thereon. From what proceeds, it is abundantly evident to me, that the bridge over the Desjardin

Canal was not broken down by the simple pressure of the traffic passing over it bearing fairly on the track rails; and it is my decided opinion from the examinations I have made, and the facts and appearance I have witnessed since my arrival at the bridge on the 20th instant, that the immediate cause of the disaster on the 12th instant, was the violent collision of some part or parts of the locomotive attached to the ill-fated train with the timbers of the ill-fated bridge, either directly or through the medium of some interposed body.

"(Signed) S. WHIPPLE."

DIAGRAM.

S R Q P O N M L K
× × × × × × × ×
A B C D E F G H I

To Mr. Richards.—I did not estimate the breaking weight of the bridge. If 570 tons were distributed over the bridge, I would not say that it would not bear it. The bridge, according to the estimate, would sustain 550 tons, but I do not think that the bridge would sustain that weight. My opinion is that the bridge would sustain a weight of between 400 and 500 tons. If the bridge were built according to the plan, it might sustain a weight of 570 tons—that is, if the computation were right. What I mean is, that if 570 tons were distributed, it would not produce a break in any part of the bridge. The bridge, if the material were good, would sustain a weight of 570 tons.

To a Juror.—The structure, previous to the accident, would sustain a weight of 400 tons.

To Mr. Richards.—I am not aware of any bridge built on the principle of the Desjardin bridge, except that over the Welland canal; they are the only two in existence that I am aware of.

To the Coroners.—I consider the timbers that I have seen of the broken bridge to have been of full medium quality when they were first put in 3 years ago; but of inferior quality now. Timber could hardly last so long in such wear and tear without deteriorating. I think that such timbers would require good attention after four or five years, owing to the action of the weather on them.

To Mr. Richards.—The bearing power of every 20 feet of the bridge, would be something over 100 tons. It would take a weight of 500 tons to break the bridge at 24 feet distance from the land. In the old bridge I do not think there were any beams broken within the 24 first beams. I cannot account for the breaking of the bridge.

To Mr. Gwynne.—The greatest weight that could be on the bridge at a time is about 72 tons, in the ordinary traffic. The object of my report is to show that the bridge could not have been broken by a dead weight.

To a Juror.—The bridge would give indications of decay before it became dangerous. Owing to the absence of experience, I cannot say positively, but I think it would give indications of decay in six years.

To another Juror.—I have known an instance of a similar bridge giving way after five years at the joints, but it was not so well protected by paint as the Desjardin canal bridge.

To Mr. Richards.—I saw some rather cross grained timber in the old bridge, but I did not see any decayed timber.

To the Coroner.—The breaking of the needle beams in February would produce an effect according as the beams were broken. If the chords were materially injured, it would be perceptible. It is possible that such injuries would not be visible; it is not probable however.

Samuel Sharp (sworn) said—I am Superintendent of the Car Department. My duties are various ; have had nothing to do with bridges previous to this one ; went up to the bridge at the time of the February accident ; thought some damage might arise, and I examined the whole of it, although it was not my duty to do so ; did not detect any bad timber ; the timber taken at the time was good working timber—such as is generally used for such purposes. On the night of the accident, I in company with Mr. McAlpine, examined the rail, and we found an abrasion near the switch. I had no doubt at that time as to what caused the accident ; my opinion was that there was a wheel off, and Mr. McAlpine was of the same opinion ; first thought it was the left hand wheel of the forward truck, but afterwards I thought it was the right hand wheel ; told Mr. Brydges I thought the cause of the accident was a wheel off the track ; am quite certain the two front wheels were off, and I feel certain that the whole of the wheels were off the track, when it got on the bridge. The witness then explained the way he supposed the bridge gave way.

Mr. Coroner **Bull** stated that at the request of some of the parties concerned, the further examination of witnesses would be postponed till Saturday.

Mr. Richards, Q. C., said that he was desirous of having the broken bridge re-arranged, in order that the jury might examine the indentations more carefully, but he thought this could not be done before Monday next. After some discussion, it was arranged that the jury should adjourn till Monday next, at 3 o'clock, and then proceed to examine the old bridge and locomotive, which is to be raised up and fixed on a scow.

Tenth Day,—Monday, March 30.

The jury met at 3 o'clock, P. M., and proceeded to the scene of the late disaster to examine more thoroughly the state of the locomotive, which had been again raised and placed in a scow for that purpose. After spending two or three hours in the examination, the Inquest adjourned till half-past three on Tuesday.

Eleventh Day,—Tuesday, March 31.

The Jury met at half-past three o'clock. The first witness examined, was

William Jenkins, who deposed—I am foreman of the locomotive department at Toronto ; am placed there to see that engines, before they go out, are in proper working order. I examined the engine "Oxford" on the afternoon of the 12th of March. It appeared to me to be in proper working order. We examine all the working parts of engines before they leave Toronto ; they are examined every time they come in ; think that engine has been on the Toronto branch for 12 months ; she had been on the main line previously ; the engine "Oxford" had been under repair in the shops but a short time before the accident ; she had only run 147 miles since being repaired ; the accident was on the second day after she again commenced running.

George Forsyth deposed—I am general foreman of the locomotive shop at Hamilton ; the "Oxford" was brought in for repairs to the shop here—(Books were here produced which stated the condition of the engine when brought into the shop. The pilot wanted repairing—both pistons examining—and the eccentric rod, driving and trailing wheels, guage taps—tires—&c. required attention.) Burnfield made that report ; the right-hand driving-wheel tire burst, and then the engineer made the report as to the general state of the engine ; most of the repairs spoken of were material, but the only reason the engine was brought to the shop, is that the wheel tire was broken ; fair wear and tear caused that damage ; she was in the shop from Jan. 20th to March 6th. (Books were here produced, which shewed that all these repairs had been executed, as well as several others.) I examined the engine personally before she left the shop ; she was in excellent, sound, working order ; had to examine a wheel of the "Oxford's" tender—the right hand leading wheel—examined the wheels of the locomotive at the same time, but saw nothing wrong—no flaw or anything else ; the engine ran four trips to Copetown ; she took the express train to London and back ; she ran four times to Toronto and back, making in all 347 miles from the time she left the shop to the time she met with the accident ; we are very frequently called upon to make such repairs as we did to the "Oxford." She was an American engine ; don't think American engines require repairing more frequently than English ones ; after having had such a first-class repair, the engine would not come in again for nine months, except for slight matters, such as tightening up piston rods, &c.

To Mr. Richards—We examined the axles, and looked to see in what condition the brasses were. The engine, so repaired, is as good as new for all practical purposes.

To a Juror—The "Oxford" was a good engine—able to perform any fair work.

To another Juror—There may have been a flaw in the axle ; there may be flaws so minute as to escape observation ; don't think there was a flaw in the axle when I looked at it ; think it was flawed before it broke ; should say decidedly it was flawed before the accident.

To Another Juror—The fractured part is not rusted at the edges, perhaps because the oil preserved it.

To another Juror—The tests we apply to indicate the soundness of the axles, are the eye and the hammer. If we fancy there is any defect, we put the axle in the fire, that causes the flaw to shew. If there were a flaw inside an axle, it would not show outside.

To the Coroners—If there was a flaw inside, the hammer would not cause its detection ; have seen flaws commenced on the inside of axles, but very rarely.

To a Juror—I don't imagine the continued friction would make the iron harder.

To Mr. Richards—The "Oxford" was in the shop on the 17th of February, 1856 ; then she had a new set of tyres on the driving and trailing wheels.

To a Juror—I think this is the first truck axle that has broken on the road ; engines are examined after every trip ; we see that the wheels are right and true to the guage.

To the Coroners—The axles which were in the "Oxford" have run for the last 12 months ; can't say how long before ; my book only extends back to February 1st, 1856 ; when we remove the wheels, we remove the axles as well—but the same axles may do for new wheels.

Alex. Braid testified—I am the locomotive superintendent of the Great Western Railway works, at Hamilton. I have only been there for 6 months, but I was superintendent before that in England ; have been fifteen years on railways—6 years engaged in the manufacture of locomotives ; the repairs to the "Oxford" were well and substantially executed ; can corroborate Mr. Forsyth's statement. My opinion as to the cause of the accident is, that the axle broke before coming to the switch. On passing the switch the left hand wheel worked inward, and marked the ties ; when about entering the bridge, the whole of the engine ran off the rails, fell on them, and, swaying to the right, the buffer beam cut away the diagonals and so went to the bottom ; it is possible for the front wheels of the truck to be off the track, the hind wheels-remaining on ; it is hardy possible for the whole of the truck wheels to be off the track, and the driing and trailing wheels to be on. (Diagrams of engine trucks, &c., werehere produced.) I think the transverse stay of the truck of the engine fell o the rails and slid along them ; think there are indications on the ash-pan at it slid along the rails, and thus, by keeping the engine from falling very ar, prevented the wheels from cutting deep into the ties ; was at the scene othe accident at about 5 minutes to 6 the same evening ; went to examine th marks on the rails, ties, &c., not more than half an hour afterwards ; saw whel marks about four rods beyond the switch—between the rails ; the whe did not mount the rails again until it had passed between the switch rails, nd bent one of them ; it shortly fell, and thence to the bridge, was so distin that there was no mistaking it ; had no idea, at the time, that the mark as made by the truck wheel ; thought it might have been caused by that of e tender ; all the tie rods were marked ; observed but one broken ; have eamined the broken axle ; there is an appearance of a previous fracture, almt all the way round, about three eighths of an inch ; there is no means of ascaining how old the fracture may have been ; it may have been broken a few inutes, or perhaps a day ; it would have been very difficult for the inspecto at Toronto to have detected it, because of its position.

To Mr. Richards—T forward truck wheels could not be far off without bringing off the others the flange could be off further than the breadth of the rail—about 5 inches if it were 10 inches off, it would certainly cause the others to come off.

To a Juror.—Therwere a good many people around when I examined the truck ; the marks. wever, were not obliterated.

To Mr. Richards.—cannot say how it is that I did not see marks made by the truck wheels on e right hand side, outside the track ; the iron which forms the fire-box is n very strong, but it has a strong frame ; if a ton weight were laid upon in front, it would bear it in ; think about 16 tons must rest upon the drivg and trailing wheels ; the ash pan alone would not prevent the wheels fromtriking the ties ; the rails would have marked the rivets of the ash pan ; is possible that the indentation on the ashpan may have been done in the ll of the engine.

C. J. Brydges anaging Director of the Line).—No complaint has ever been made to me oncerning any alledged defect in the strength of the bridge. Some time ag an accident took place on the Galt branch, and I immediately gave ords to the engineer to examine all the bridges on the line, and if anything is necessary, to have it done. That is why the Desjardin bridge had addinal needle beams put in it. The switch was placed near the bridge, becau the engineer thought it advisable that the trains to Toronto should use as all a part as possible of the main line. I am not at all prepared to say th the position to which the switch has been removed, further from the brid is at all less dangerous, because collisions may occur between trains appaching from the two branches at one time—on curves and in cuttings—so th the engineer of one cannot see the other. The only objection I saw to the itch being so near the bridge, was a danger that the train might run off th rail there, and go into the canal. However, trains do not generally run man feet after going off the track. I recollect Mr. Sharpe's telling me that the xle would probably be found to be broken. Mr. McAlpine is the engier of the Eastern section of the line. Has been for nine or ten months. e has been in the Company's service for four years. I consider him a compent man.

To Mr. Richards—I have heard no complaint of the switch. Mr. Street made no complaint abt it to me. The Directors in this country have the power to build bridges whenever they please. It has been the intention of the Directors to build a bridge at St. Catharines for some time. The Directors here have full power to incur any expense for the ensuring of the safety of the line. Trains pass switches and junctions without stopping, unless signalled to do so. The grade of the road near the scene of the accident is nearly 45 feet to the mile. The grade on the bridge is about the same. The Directors have had the power of spending money for a stone bridge at St. Catharines. I unhesitatingly contradict all rumor to the contrary. The whole of the receipts of the Company have been spent in this country, and a great deal more besides, has sent out from time to time. That will go on until we consider the line complete.

To a Juror.—It would be desirable to have a fixed bridge at the place. The Directors would make it a double track bridge, and have an independent track for the main line, and also for the Toronto branch. That would be done if the Directors had the power, to make a fixed bridge. All bridges would be dangerous if a train would run off the track on them. The reason why the law about trains stopping before bridges was repealed, as it concerns the Desjardin bridge is, that the grade there is so heavy, that heavy trains cannot start after stopping there. Trains have been obliged to come back to Hamilton and take a new start. Besides, when the navigation is closed, and the bridge spiked down, it is to all intents and purposes a fixed bridge, and there can be no reason why it should not be regarded as such. There was a difficulty both with passenger trains and freight trains.

To another Juror.—If the axle had broken at the switch, and the switch had been where it is now, possibly the engineer might have discovered it, but the axle might break at any part of the line. The only reason why it should break at the bridge is on account of the curve, just before it.

To Mr. Richards.—If the right hand wheel had been off the track, the presumption is that I might have seen the marks on the track. I did not see such marks.

To Mr. Gwynne.—The Schenectady locomotive works, where the Oxford was made, are considered to be among the best in the United States. I have caused a number of them to be ordered, so high an opinion of them do I entertain. The foremen, &c., in our works are the best that we can get for money.

On the question of adjournment, which was now moved, as all the evidence, except that of the engineer's, had been taken, Mr. Richards said he had no desire to delay the Jury; but it was desirable that the broken wheel, and a portion of a rail which were in the canal, should be recovered, previous to receiving the evidence of engineers. After considerable discussion, the Inquest was then adjourned to Friday afternoon, with the understanding that, were it possible, they should be specially summoned at an earlier day.

Twelfth Day,—Friday, April :

The Jury met at three o'clock, P. M. The first witness examined was

JOHN L. MCALPINE—I am an engineer in the employ of the Great Western Railway; was at the scene of the disaster immediately after the accident occurred. I have examined the bridge, and drawn up a report.

The report was then read, as follows :—

"Having made a careful examination of the Desjardin Canal swing bridge, as constructed previous to the recent calamitous accident of the 12th ult., I am enabled to give the following results as deduced from calculations made of the various strengths of the parts composing the structure.

"I find the available cross section of the lower chords 120 square inches, the ultimate tensile strerth of which is 840,000 lbs. The greatest strain to which the bridge could subjected, is that due to its own weight, together with two engines and a nder, being a distributed load of about 100 tons, or equal to a load of 50 to borne at the centre; the ultimate strength of the chords to load being in e ratio of 7½ to 1.

"The strain on thupper chords is equal in intensity to that on the lower chords, but it is e of compression or thrust, while the other is tensile; the timbers formi the upper chords are the same in cross-section as those in the lower chor, and their ultimate strength is as fully in excess of the greatest load.

"The tie braces eh contain 42 square inches of cross-section; those nearest the abutments e the heaviest taxed, they have each 25 square inches of available fibres toresist tensile strain, and 17 square inches for bolt surface; the extreme rength of one pair is equal to 245,000 lbs., or 109 tons, their ultimate strgth to load, being as 7 to 1 nearly.

"The smaller bracen pairs, each one 6 x 3¼ inches, are in strength nearly in proportion to thtie braces, and are consequently capable of performing an almost equamount of work. Unlike the tie braces, the nature of the strain to which th are subjected is variable, they being either in a state of compression ornsion accordiug to the position of the load.

"The united strenh of the floor beams is 650 tons, the greatest weight they had to bear 75 ton ultimate strength to load being as 8 seven-tenths to 1.

"Finding in all thother parts of the structure ample capacity for the greatest strains to whicthey could have been liable, and making reasonable allowance for imperfeons both in materials and workmanship, I am led to the conclusion that theltimate strength of the bridge for a distributed load could not have been lethan 375 tons, or in the ratio of ultimate strength to greatest load as 3¾ 1.

(*Signed*,) "JOHN L. MCALPINE,
Engineer, Eastern Division."

HAMILTON, April 3,357.

Examination resud:

It was about a qrter to 8 o'clock when I examined the marks on the ties. The marks apped to me to have been made by the truck wheel of the engine; believes the gine to have been off the track. The bridge has been under my superintenece for 10 months. During this time I have never beard any complaint fm any source, in reference to the insufficiency of the bridge; always considd it safe. When the accident occurred in February last, I made a thorougexamination of the bridge, and ordered the repairs to be made. None ofe longitudinal timbers were then broken; the end timber towards the la was broken; it was struck by a freight car.

The chords wereot injured in the least degree. There were 17 additional needle beams t in in February, and 12 in July.

To a Juror—Donot think the present bridge stronger than the old structure. An iron sg bridge would be more durable, but does not think it would be any stronr.

To Coroner—If o or three inch planks were laid on the bridge on a level with the rail, it uld not render the bridge safer. In that case should a locomotive run offe track, it would break the lattice work, and go over.

To Mr, RichardsSaw the marks inside the rails, they were perfectly fresh ; searched for marks outside the rails, but d not discover any ; there were some marks inside the rails which were me in February ; saw some marks which he could not account for.

Geo. Lowe Reid, (sworn)—Was Chief Engeer of the Great Western Railway ; I was at the scene of the accident at o'clock on that evening ; made an examination of the bridge on the follow g day, and have drawn up a report.

[The report was then read.]

Examination resumed—I saw the marks on e ties ; they were newly-made ; the marks are correctly represented on thplan drawn up by Mr. McAlpine ; looked for marks on the west side of thrail, outside, but did not perceive any.

To Mr. Richards—I saw other marks on thees which were made on a previous occasion ; think the whole of the locomove was off the track before it got on to the bridge ; marks may have been ma outside the rail.

The rail that was taken out of the water h an abrasion on its surface as if there had been a sliding motion of the eel. The momentum of the train would affect the action of the bridge. Ithe train was going at 20 miles per hour, it would be much more likely to bak the bridge than at 5 miles. The marks were made in a herozontal diction. I think the locomotive was riding on the chords of the bridge.

To a Juror—There are degrees of safety in fferent bridges, but supposing a locomotive off the track, they are all on ear.

Frederick Preston Rubridge, sworn.—Am a civil engineer ; have been connected with Public Works for the last 15 yea ; was instructed by the Assistant Commissioner of Public Works to exame the track and remains of the bridge, and report to the Government ; he drawn up a statement, which has been presented to the Public Works partment at Toronto—a copy of which is herewith produced.

The report was then read, which occupied great length of time in reading, and concluded by reporting the bridge to ve been in an unsound, unsafe and dangerous condition, on and before the th of March, 1857.

To the Coroner.—Had the weight of the engi (34 tons) been equally distribnted over the needle beams, they would probly have sustained the engine if off the track, but the lower chords would ha given way. The lower chords were weaker in proportion than the needle bms. If the needle beams were each equal to a breaking weight of 34 tons, it uld of course take great concussion to break them. On account of the wea and tear, and the insufficiency of the lower chords, I should think the prese bridge would be unsafe twelve months hence. At present it may be safe: hould have no hesitation in crossing over it now. The lower chords are mucweakened by the bolts which pass through them.

To a Juror—I do not approve of the principle the swing bridge. Supposing the engine to have been proceeding at the r of from 5 to 6 miles an hour, I could estimate the force of the blow to be tons. Had the chords been strong enough, thinks that the bridge mig have sustained a locomotive if it fell nine inches ; thinks that the span unnecessarily wide ; a swing bridge might be built there and would, no dou, be sufficiently strong. There were two weak points in the bridge, which is natural to suppose were the first to give. Does not think the engine bke the lattice work in the first place. The marks on the bridge do not jusy that theory. Thinks the engine was 24 or 26 feet on the bridge before i went off the track. In descending, the engine might have struck against thattice work, or perhaps the tender. Does not believe the front of the buffer am struck the lattice work where the red mark appears. In falling, it is pble that the engine would strike some portio the wood-work of the bridge, and gather some such particles of paint o ood as is said to have been found on and under the nut on the buffer bea

OFFICE OF PUBLIC WORKS,
Toronto, March 26, 1857,

T. A. BEGLY, Esq., Setary.

Sir,—I have the honto present to the Commissioners of Public Works the result of my investion, pursuant to instructions from the Honorable Assistant Commissioner, isit the locality of the recent sad accident, and report upon the facts wh there present themselves, with reference to the destruction of the woodridge across the Desjardin Canal, on the line of the Great Western Railr between Toronto and the city of Hamilton, on the evening of the 12th of h. 1857. In accordance therewith, having spent six days in examiningery portion of the broken timbers of the former bridge; having maly weighed every circumstance tending to throw any light upon the orig its fall. I submit with some degree of confidence, the convictions which atast have not been hastily formed upon this very painful subject. I ac as a fact, what the raising of the engine goes far to prove, a defective axle, showing indications of a flaw at the right nd wheel of the forward truck of the locomotive, had broken flus, with its bearings on the inside journal, the first evidence of which is agent near the switch, about 130 feet from the ill-fated bridge; the sharp of the curve at this point, on a descending grade as I am informed of 49et, having caused the left wheel to drop between the rails of the Torontod main Western line at the junction, where the Pinch no doubt not onlnt the Toronto rail and broke the chair, but caused all the abrasion on ton spikes and rods and some of the nearer indentations on the hardwood pers which have been so much remarked upon.— There is but little que in my mind that the left-hand forward wheel was first off, then on, and in off the rail on the Bay side, a circumstance, which coupled with thegging of the fore part of the engine from the loss of its usual support, wl probably by this time have excited the notice and alarm of the engiriver, and induced him when too late to whistle on "breaks"; and would aaccount in some degree for any jolting or vibratory motion, more than nary, which some of the witnesses have referred to. While conceding ar this disturbance at the forward wheels, I am fully of opinion the ining wheels of the truck and the hind wheels kept the rails on to tridge up to the point the locomotive had attained when violently throw the track by the giving way of the bridge. There is not sufficient evidthat the engine was wholly off the track in the slight single line of n which has been so much scrutinized of late; they are neither heavily e indented, nor have any parallel marks on the right side ever been nd. Moreover, had such been the case, the engine would either have plod into the needle beams from the toe of the bridge, on the outside of the hand rail, or would have struck the side lattice bracing full in front, hus have gone over the stone abutment.

Again, taking ther assumption, that the buffer beam of the engine had torn away the lat bracing a few feet from the toe of the bridge on the right hand, in the support case of the lower chord being destroyed, its ability as a portia beam, breaking with 22 tons, would have been instantly changed to sinking under five-and-a-half tons, and the engine must have pitcheh ewnwards without ever reachnig its full length on the bridge itself. Frll the facts which I can bring to bear, I assume the engine had reached itire length on the bridge, while the front wheels of the forward truck o tender, were still over the masonry. As before stated, from the loss of its usual support forwardh the leading wheels, the engine, while still on the rails, would have an uasy motion, which would tell disastrously on the tremulous platform of theail bridge, and it may be from the unequal revolving or "fouling" of the engaged wheels, and the oscillating motion of the front part of the engine considerable concussive shock or succession of shocks, was imparted to t bridge-timbers, sufficient when brought to act upon weak portions of the crds or braces in assisting to precipitate its fall.

There were two decidedly weaker parts of the sicture on the right hand or Dundas side near the centre of the platform spamg the canal, unequal to resist more than the ordinary stress of a passinrain ; and it wanted but this or some similar unusual occurrence to bring out the catastrophe which ensued. I consider, therefore, the destruction ahe bridge, in its recently trustworthy condition, was an event to be shortlooked for, since the unsound state of the materials of which it was consed convincingly proves that it had reached the point of danger. Every lication noticed upon the fractured remains of the bridge shows me thahe platform gave way at about the intersection numbered XI. on the plancompanying, and that at the right side towards Dundas, for the reasonbove stated, namely, two weak and insufficient parts of the structu The engine having reached about 26 feet in length of the bridge, warom the subsiding of the platform at these points, suddenly jerked or pitd sideways and forward in the direction of its disengaged wheel, and teffect of this heavy body heeling over and shifting its centre of gravity ahe same instant of time from the weight being so much above the rolli plane, would cause the wheels to slip inwards, forcing the rails from the sps with them, striking the needlebeams, while the heavier parts of the en caused it to turn in its descent until it rested nearly bottom upwards he canal. Its diagonal direction, therefore, by the law of forces, was theult of the sinking of the timbers on one side opposed to the engine's directward motion at the same time. I humbly conceive the position which the merged engine assumed as it appeared above water level upon raising, w the tackling poising it wholly from the one side, would create an impren that it fell on the left side, but this is contrary to all the evidence whic can gather elsewhere ; the bent form of the rails, parallel with the abovecribed path of descent, the peculiar marks of the smokepipe upon the truss and its position thereon, the inward twisted form of the iron cougs to the rails as they resisted, before parting, the momentary thrust f the engine wheels prying below, as if toppled over above ; these and othcts satisfy me as to the probable course of its descent. While all the wh and portions of the engine on the left side appear sound and unbroken, iron stay rod, the cow-catcher, the cylinder and other iron works on the t hand side are damaged or fractured ; further, the depth in which it embed itself in the soft muddy bottom is clearly defined by an angnlar line ac the boiler, &c. The remains of the bridge when I inspected it on Moy morning, the 15th of March, presented the following aspect :—The plrm or bottom, had been torn away bodily for over 40 feet of its length, lg the side braces more or less injured, hanging to the top-chords ; the fa timbers had that morning been collected upon the margin of the canal w, and, much to be regretted, had been separated and put entirely out oir relative places, leaving the evidences which they would have afford undisturbed, the subject of after conjecture and uncertainty. Partiesmechanics were cutting away portions of the broken bridge preparatoryts speedy repair. The side chords upon which the whole locomotive trai addition to the weight

Pamphlet Binder
Gaylord Bros., Inc.
HE 2810
HE 2810 .G78 F9
Full details of the railway di
Stan

of the bridge timbers, depiled, were fractured at the points where the section of the timbers had been st weakened; thus a rupture took place on both sides where the divisions marked IX. upon the plan; and where three 8½ inch iron bolts cut the fi transversely; here, also, was the scarf joint of either stringer. No. X. ere only two bolts occurred, had resisted the shock, while at No. XI. again wkened by three bolts, another fracture showed itself on both sides; betw XI. and XII. the great force of the blow fell, as the lower chords eviden by the splintered fragments, and portions being missing; at No. XIII., we another scarf was found, it had broken as in the former instances; in fache whole testimony of the shattered lower chords gave proof that these wensafe portions of the bridge. I next proceeded to examine the character oe timber, upon which so much had been suspended by two or three bolts intervals, nine feet apart. This examination was by no means satisfactory whether from the perpetual jarring effects of passing trains, or from prevs injuries which I had heard it had undergone—one having occurred in tmonth of February just transpired—it struck me the vital elasticity of thmber had become impaired. I discovered heart-wood, cross-grain and uund wood in these important string timbers, the parts in the vicinity of tbolts were blackened, crushed and impoverished, and in the wind shakeshere moisture had entered, deeay was at work.—From the chord on the Ilas side numbered IX. where one-eight of the section of the timber is woess, I took a handful of rotten wood, which, I can now produce. This, fur weakened by a scarf joint at the same place corresponding with one on opposite side, gave little promise of security under the weight or heavy traassing. The principle of construction resorted to would appear to be chiesuspensory. The locomotive rests its whole weight upon the needle beams. hese hang upon the chords or stringers, which in their turn are suspendy the lateral braces and upper chords. All the rigidity the bridge poss is from the stiffness of the lateral braces connected at their intersections ble-bolts, and as this is affected or impaired by constant concussion, I find conpensatory principle or arrangement for recovering rigidity or stiffness any means of adjustment; the whole platform then depends upon the strenand ability with which the bottom chords resist being torn asunder trarsely, where intersected by iron bolts; as a new or sound structure, the pple, upon investigation, may not be condemned as insufficient, as I shall ptly show; but its durability, in my mind, is very unpromising, and canne relied on so favourably as other modes of bridge building which might lduced. If moreover, the ensile strength of any of the supporting braces und deficient in one or more points, the weakened beam below is still fur untrustworthy, and such a disaster as that of the 12th of March was liko be the result; the reduced section of the lateral braces, at No. X. Dunside, shews a deadened cross grained fibre, which a common place remarhort as a carrot," so well illustrates, that I here insert it, and produc parts themselves in corroboration; its cohesive strength or power to t being torn asunder in the direction of its length, I consider at this pointe nearly valueless; and without seeking for further evidences of weakness failure, I here point to these facts as a reason why the Desjardin Canal Be gave way on the side upon which these defects were discovered. Thw timber, moreover, which had replaced that injured by the accident in Fery, was not of a choice description; some of it appeared, from its fractto shew like top-wood, or timber from the upper portion of the tree; eam especially I noted, where a long knot, in the vicinity of a bolt holewed a rent with a short vertical fracture. It is, of course, a safe assertiow that the bridge between its bearing points has been tested, almost aew structure, with a weight of 70 or 80 tons, to say that the bridge is sufficiently strong. Havingide the calculation for its strength previous to this test being applied, and entioned the result to the Honorable Assistant Commissioner and others, Iall refer to the estimation then given and believed to be nearly correct, thahe breaking weight of the above extent of bridge, say 72 feet, might be :en at THREE HUNDRED AND FIFTY TWO TONS uniformly borne, one third of wh, or 117 tons, being the useful practical measure of its strength ; to test, therefore, with two engines and one tender, weighing together, say 75ons, was quite within the limit of safety and precaution; as a sound piecef construction. The basis of this calculation, was, not to assume the side licing and chords as a rigid beam, of which rigidity I had misgivings, and wh the accident has demonstrated was a flexible one ; since a beam, 72 feeong by 19 feet deep, would have given a much greater breaking weight, b I sought the elements of strength for the whole, in its part ; and what a portion of lower chords, nine feet long between their suspending supportas calculated to bear ; this, I believe to be the true measure of the strength he Desjardin Canal Bridge. Had the lower chords been equal to the shock, tneedle beams would alone have broken through, leaving the lower attached he upper chords and traces which remained behind ; these lower chords pret a. cross-section of 12 in. by 5 in., two of such being connected together bynsverse bolts on each side, these bolts 1½ inch each in diameter, reduce thetion (not to mention the scarfs) to a beam 7½ inches in depth by 10 ies broad, and nine feet in length ; which, for the two chords, one on eache of the bridge, under an uniform load, would break with a weight of 45 t, or 22 tons for each singly. A heavy locomotive of 36 tons would press upoi occupy two of these portions of platform, or eighteen feet in length, ancit is shewn that it would require 88 tons to break this extent, taking one:d of the latter as the safe practical strength, this, therefore, would be svere test inasmuch as 37 exceeds 29½, for constant and daily use. For a ton engine, which I have assumed the Oxford to have been, the weight wl just fall within the limit of the practical strength, and might be confidenrun over while the bridge continued sound. For the heaviest class enginesereforo, it would be desirable to increase the depth of the lower chords so 14 inches instead of 12, and I am of opinion that when the needle beams e replaced after the injury in February by others, the lower chords likewihould have been renewed, and with timbers of a deeper scantling. In addthis additional two inches to the depth of the lower chords, while only incing the weight of material in the bridge by twenty cubic feet or 600 lbs., thevould have been a decided gain of two-thirds its previous practical strengt the ability of sustaining seventy one tons additional burthen equally spre Under these more favorable circumstances the lower chords would haven strong enough to have resisted the shock of an engine dropping nine in on to the timbers, even had the needle beams given way—or as 117 plus=94 tons. Several forces were brought into action at the destruction of thege. If, as I am informed, the bridge is on a descending grade of 50 feet pile, or say 1 in 150, the effect would be 21-5 tons force of gravity to an ee of 28 tons entering on the inclined plane of the bridge. In addition s transverse and cohesive strains, there was also the effect of torsion or twg, from the engine being canted sideways, causing the braces on the left oy side to break short off where connected with the lower chords at their wr section ; there was also the further serious injury before alluded to, i the blows or concussion arising out of the deranged wheels and broken awhich wheels I find weigh each about four hundred and eighty pounds, prong the effect of a falling body, the precise destructive force of which thei not sufficiently positive evidence to be obtained.

Although, therefore it is, and must remain, a sot of mystery and uncer-

Gaylord Bros., Inc.
HE2810

tainty, as to the real, dee cause of the accident to the bridge itself, yet there is in my mind no un ainty as to the state and strength of this railway structure to resist or tain any untoward shock ; accordingly, upon a thoughtful consideration e foregoing circumstances, I have come to the conclusion to report the ardin Canal Swing Bridge to have been in an unsound, impaired and da rous condition on and before the 12th of March last.

And ve the honor to be,
Sir,
r obedient, humble servant,
F. P. RUBIDGE,
Assistant Engineer Public Works.

P. S.—The weight o e engine has in this Report been assumed at 28 tons ; it would appear t 4 tons is nearer the truth ; but taking the force of gravity upon an inclin 1 in 105, it may have pressed the bridge timbers with about twenty-six to

The accompanying s, sketches and photographs, are referred to as illustrating many of the going remarks.

F. P. R

Thirt Day—Saturday, April 4th.

The Jury met at 2 o' , P.M. Before proceeding to their regular business, the jury were for a time engaged in the examination of a model of the bridge, and of a par the track leading to it, as well as of a locomotive engine, constructed und r. Sharpe's direction, by a few of the mechanics employed at the shops e Great Western Railway.

Mr. Rubidge was er examined. He said—I consider the bridge safe, but barely so, for in going over on the rails. Of course, I consider that it was just in th ndition that anything going wrong would bring about an accident. I e that the bridge was in a dangerous condition, and at any moment it yield and give way.

To a Juror—The st parts of the bridge are where the defective parts were discovered, (poin to the model.) Here (No 8.) was a defect in the chord—one-eighth of i injured. Here (No 10) was another weak point. The braces were evide roken with a very light stress. The whole of the right hand side was w

To Mr. Gwynne ntered the Board of Public Works as a draughtsman and assistant en r. I was employed in laying out the Beauharnois Canal, enlarging the e canal, &c. I acted in the field under Mr. Keefer. Previous to my ing the Department I had been engaged under Mr. Baird on the Wellan al, on that between the Bay of Quinte and Presque Isle, and on the rail ear Cobourg. I first commenced in the country 30 years ago as a s or. I never had any training as a civil engineer beyond that which 30 s' experience gives. The most celebrated engineers are those who have c nced in this way.

The Coroners ob to further questions of this description.

Witness continu Ten years ago I was the only resident engineer of the Board of Works ad the superintendence and supervision of all the bridges in Lower Can of which I have built probably more than any man besides. I have no ence on railways besides in surveys. I do not pretend to much infor as regards locomotives. I have been more connected with macada roads. These [produced] are the pieces of timber I consider inferior. mean to say that these are inferior samples of timber for ordinars brid I think a swing bridge might be constructed which would prevent an e going off the track, from going over or through the the bridge. I wou insist on the impossibility of an engine going over.

It is, however, not unlikely that a tubular bridgaight be made strong enough to resist in both cases. If the rails were on tltop of a tubular bridge, of course the engine would go over, if it went mu to one side. I speak merely from my impressions as regards tubular bries. I do consider a swing bridge of timber might be made much stron; than the structure at the Desjardin canal.

I form my opinion as to the danger of goiover the bridge in a car after its construction, from a belief that the priple of the bridge is faulty. Not in any supposition that the weather would ure the timbers in that time —there is very little rigidity about the bridg After 12 months I should look for injury to it. I am aware that there a bridge over the Welland canal built on the same principle.

Mr. Gwynne—If you found that sound anequiring no repair—having in the meantime had none, except in the braciup of the bolts—should you conceive your opinion erroneous?

Witness—I don't say that the Desjardin bre was unsafe—I merely calculated that it would have been so, if theory is rect.

Mr. Gwynne—Do you found your report mly on theory, in the face of ascertained practical results?

Witness—Not at all. I compare my t:y with results shewn on other bridges, much stronger than this. The ner you approach rigidity in the construction of bridges, the nearer you att perfection. The insertion of bolts in the Desjardin bridge is calculated ause permanent injury to the bridge—soft wood in contact with hard ircets jarred. I think they support the lower chords, and do not contribut the rigidity of the bridge. I do not confess to arrive at any conclusion thecause the Thorold bridge remains sound, therefore another must do so.

To Mr. Richards—I have constructed somehe largest bridges in Lower Canada. The principle of every bridge shoulc that it should represent a rigid beam or plank on edge. In the Howe trhere is a provision for restoring rigidity—the diagonals press end againd. There are tension rods on the top, by screwing which up, the rigidityhe bridge can be entirely restored. In the Desjardin bridge there is no ı provision. The tensile strength of the upper chords and lattices is gr than that of the lower chords. The shock given in February last wı be very likely to injure the fibres of the timbers. Certainly the masts ı vessel striking it would do so.

To Mr. Richards—I consider the Desjardidge, in principle, like a succession of bridges, 9 feet in length—not as a e rigid beam at all. The end of the first needle beam, the body of which id not find, was perfectly rotten. I think the first six or seven of the othre placed in their proper relative positions in the bridge as reconstructn the beach. There are none of those near the Toronto end broken thh. The tenth [from the Toronto end] is missing. Only one of the 8 bet is fractured. More of these are marked outside the right hand rail. oes not appear that any blow was given to these on the right hand side h caused the fall of the bridge. The rotten wood was taken from No 9 e. The rotten wood was near the bolt.

To Mr. Gwynne—I believe that the markthe lattice of the bridge were made by the tender. The marks on the ties I believe to have been made by the wheels of the engine conjointly the rails. I think some of the marks on the ties, before coming to the t, were made by the left hand wheel. The engine is a loose, heavy body think it very likely that the right hand wheels of the locomotive made theks on the ties between the rails, after it had canted over, and the rails torn from the stringers, and thrown, together with wheels, inside the treingers.

for the pine splinters formed in the buffer be and the oak fibr
thread of the chord bolts.

7. The outer ring of the axle fracture noteing oxidised, would
that previous to its immersion in the water it h revolved long enou
semi-fractured condition to become oiled, and ts protected from ru
champered angle of the inside bearing box morrongly points to a c
revolution of the wheel in contact with it for so time after the axle
and before it was completely separated.

8. The absence of any marks of the tru wheels outside of t
hand rail to correspond with them on the inside the same, may be ac
for by the fact that the needle beams were herevered by the loose
of the foot path, and upon the supposition thathe broken right ha
ing wheel, detached by the blow upon the stonork, would be double
the truck frame, and keep the following one frostriking,—the weig
engine still being principally within the rails aihe truck inclined to
also that the buffer beam, in contact with thattice, would sustai
wheels above the level of the needle beams.

9. The absence of any traces of the drivimr trailing wheels u
needle beams, with the exception of the first onmay be accounted fo
supposition, 1st, that the support on the right hbeen cut away befo
wheels left the stone-work, and that in falling theedle beams kept a
them; and, 2ndly, since the needle beams were pended by bolts pa
in the open space of ten inches between the clds, which bolts we
upon loose oak blocks, free to slide along the to f the chords to to th
of each panel or space between the points of thattice connection v
chord: and since there were three beams each sen inches wide in ea
—that after these three beams were thus drivenrward, there wou
open space wider than the diameter of the drivor trailers, throug
these might drop until the ash-pan rested upon trail.

10. The fact that no marks were discovereutside of the right h
on the night of the 12th ultimo, may be account for from the consi
that these marks commence within twenty feet the bridge, white t
marks within the rails extended from the switco the bridge, a dis
130 feet. As many persons had been working n the bridge, resc
wounded &c., any fresh marks on the short disnce of 20 feet out
right hand rail might have been trampled out, ohidden from the vi
ticularly to persons examining at dusk or after d—while those mar
were between the rails would be more readily trad from their greate
in length, the trail once obtained at the switch bng followed with c
tive ease to the bridge.

I am, therefore, led to the conclusion—fron consideration of
dences at the switch and on the track, and the osequent appearan
engine and the bridge—that from the failure ofe right hand whe
engine truck at or before reaching the switch, theft hand leading w
let down inside the rail, and continued in that osition [with the f
wheels upon the rails] until it reached the copiof the abutment,
struck, throwing the truck off to the right, and rrying the engine
right hand truss, marking its path by the paint the buffer beam,
soot of the smoke stack, and giving evidences of rtual contact by the
splinters found on the engine, and the oak fibresf what I believe
cow-catcher beam) found on the chord bolt.

I have considered it preferable to investiga the causes of the
without reference to the sufficiency of the bridge a structure, or e
of its ultimate strength or breaking weight. T depends wholly
assumed constant for the tensile strength of whiteine, which quanti

for the pine splinters formed in the buffer beam and the oak fibres in the thread of the chord bolts.

7. The outer ring of the axle fracture not being oxidised, would indicate that previous to its immersion in the water it had revolved long enough in a semi-fractured condition to become oiled, and thus protected from rust. The champered angle of the inside bearing box more strongly points to a continued revolution of the wheel in contact with it for some time after the axle yielded, and before it was completely separated.

8. The absence of any marks of the truck wheels outside of the right hand rail to correspond with them on the inside of the same, may be accounted for by the fact that the needle beams were here covered by the loose flooring of the foot path, and upon the supposition that the broken right hand leading wheel, detached by the blow upon the stone work, would be doubled under the truck frame, and keep the following one from striking,—the weight of the engine still being principally within the rails and the truck inclined to the left; also that the buffer beam, in contact with the lattice, would sustain these wheels above the level of the needle beams.

9. The absence of any traces of the driving or trailing wheels upon the needle beams, with the exception of the first one, may be accounted for by the supposition, 1st, that the support on the right had been cut away before these wheels left the stone-work, and that in falling the needle beams kept a-head of them; and, 2ndly, since the needle beams were suspended by bolts passing up in the open space of ten inches between the chords, which bolts were hung upon loose oak blocks, free to slide along the top of the chords to to the extent of each panel or space between the points of the lattice connection with the chord: and since there were three beams each seven inches wide in each space—that after these three beams were thus driven forward, there would be an open space wider than the diameter of the driver or trailers, through which these might drop until the ash-pan rested upon the rail.

10. The fact that no marks were discovered outside of the right hand rail on the night of the 12th ultimo, may be accounted for from the consideration that these marks commence within twenty feet of the bridge, white the fresh marks within the rails extended from the switch to the bridge, a distance of 130 feet. As many persons had been working near the bridge, rescuing the wounded &c., any fresh marks on the short distance of 20 feet outside the right hand rail might have been trampled out, or hidden from the view, particularly to persons examining at dusk or after dark—while those marks which were between the rails would be more readily traced from their greater extent in length, the trail once obtained at the switch being followed with comparative ease to the bridge.

I am, therefore, led to the conclusion—from a consideration of the evidences at the switch and on the track, and the subsequent appearance of the engine and the bridge—that from the failure of the right hand wheel of the engine truck at or before reaching the switch, the left hand leading wheel was let down inside the rail, and continued in that position [with the following wheels upon the rails] until it reached the coping of the abutment, which it struck, throwing the truck off to the right, and carrying the engine into the right hand truss, marking its path by the paint of the buffer beam, and the soot of the smoke stack, and giving evidences of mutual contact by the painted splinters found on the engine, and the oak fibres (of what I believe was the cow-catcher beam) found on the chord bolt.

I have considered it preferable to investigate the causes of the disaster without reference to the sufficiency of the bridge as a structure, or estimates of its ultimate strength or breaking weight. This depends wholly upon an assumed constant for the tensile strength of white pine, which quantity is de-

To a Juror.—Had he anticipated the accident, he would have made the track run upon the the top of the bridge, instead of the bottom, so that an engine could not go through—and if it ran over, probably the engine tender and perhaps baggage car would alone be precipitated into the canal. He had examined the timber of the bridge. There were a few sticks not very good; but the beams were as good as those generally used in timber structures. He thought the bridge was of a kind very well adapted for a new bridge, although perhaps he would not have built it so.

To another Juror.—He thinks that in that place there was height sufficient to have built a bridge for a train to run over the top of it. When a train ran on the top of a bridge, several additional stringers and chords might be put in to strengthen it so as to resist almost any weight or strain. When the track ran inside the tressel, there had to be considerable space between the chords, to allow of the passage of the engine and cars.

James C. Street, deposed—I am a Civil Engineer, and was, at one time, connected with the Hamilton and Toronto Branch road, as contractor's agent. I heard no complaint as to the Desjardin bridge, nor was it my business to inspect the bridge, as it is on the main line of the Great Western Railway. I have been perfectly acquainted with the bridge for four years, and conceive it capable of bearing up any train running on the track. I conceive, however, that the principle of its construction is bad, in case of a train running off the track. I have seen several swing bridges of iron, and one draw bridge of wood. I know of a better principle of construction than that of the Dsejardin bridge. I have read Mr. Whipple's calculations and I have reason to believe them correct. I think, however, that a bridge might be made as light and safer than the Desjardin canal bridge, to answer the same purpose. It is on the London and South-Coast Railway, its construction was directed by Mr Rastrick. I think the bridge would be practically stronger, if the trusses were of less depth, and the lattices thicker, although the bridge so constructed would be theoretically weaker, the same quality of timber being used in each case. Another defective principle in the construction of the bridge, is the placing of the needle beams below the chords instead of upon them, as in case of breaking, they act as powerful levers to break the chords.

To Mr. Richards—I should think if the bridge were injured by the February accident the flaws would have been perceptible. I saw the bridge the day after the February accident, also the day after the late accident. I looked, but merely in a cursory manner. I saw no marks on the right hand side of the track.

To Mr. Gwynne—I did not examine carefully. If the bridge was well repaired after the February accident, it would be as strong as ever. When a train runs off the track, the question as regards bridges, is only one of degree of safety. None could be absolutely safe. I conceive that the truck only was off the rails up to the moment of going down. The driving wheels may have been off, but I don't think they struck the bridge with much violence. If I found marks on the right hand side of the rail corresponding as to the guage with those on the inside of the track, I should imagine they were made at the same time.

To the Coroners—I think the bridge would be safer if planked. I would not put more than a three-inch plank, so as just to allow the engine to go through, and then let its motion be impeded. I conceive that a succession of blows was given to the needle beams by the wheels, thus giving a vibratory motion to the whole structure which accelerated its fall.

To Mr. Richards—I think the truck must have been off the rails at the moment of entering the bridge. There is no mark of a very violent blow on the cross ties found.

Fifteenth Day—Tuesday, April 8th.

The Jury met at three'clock, p. m.

After the Coroners ha briefly summed up the evidence and stated the case, the Jury retired to cosider their verdict. The following is the

VEDICT OF THE JURY.

COUNTY OF WENTWORTH, } "AN Inquisition indented and taken for our
To Wit: } Sovereign Lady the Queen, at the city of Hamilton, in the county of Weworth, the 13th day of March, 1857, and other days, (according to adjourment,) before H. B. Bull and J. W. Rosebrugh, Esquires, Coroners for theaid County, for our Sovereign Lady the Queen, on view of the bodies of Dald Stuart, A. Grant, John Russell, Mrs. Beck, Joseph Barr, Mrs. Doyle, Jmes Gannon, Samuel Zimmerman, Thomas Benson, John Sharp, Rev. Alfd Booker, Erastus W. Green, Thomas Gorwell or Doyle, an infant daughr of Mrs. Beck, John C. Henderson, Mrs. Jno. Russell, Daniel Secord, Edard Duffield, Manaly Clare, Capt. James Sutherland, Adam Ferrie, Geo. arragh, James Ross, Jacob C. Snyder, Junior, John Wilford, Alexander rnfield, Mr. Barton Senior, Robert Crawford, Mrs. Sturdy, Hugh McSloy Rev. Dr. Heise, Timothy Doyle, Patrick Doyle, James Harkness, Charles Brown, W. H. Kendall, Diana McFiggan, John Bradfield, a man unknown John Morley, Ellen Devine, Mary Devine, Geo. S. Sloan, James Forbes, D Curtis, D. Witter, Mrs. Bradfield, Ralph Wade, Colin Campbell, Geo. Ellail, G. McDennie, Hugh McEvoy, Mary Jane Davis, James Major, Mrs. Hyden and child, George Knight, Mr. Farr, and Mrs. P. S. Stevenson, bein then and there lying dead.

"Upon the oaths of JAES MCINTYRE, *Foreman*, James Osborne, Joseph Lister, John Moore, John albraith, Levi Beemer, Robt. Roy, Jesse Nickerson, Thomas B. Harris, Rt. Osborne, William G. Kerr, Alex. Hamilton, Lewis R. Corbey, Charles Magill, Horatio N. Case and James Cummings, good and lawful men of t said county, duly chosen, and who being then and there duly sworn, and harged to inquire for our said lady the Queen, when, where, how and aft what manner the said persons aforesaid came to their deaths, do upon theiraths say that the said enumerated persons, being passengers and servan of the Great Western Railway Company, came to their deaths in consequence of the Company's locomotive engine "Oxford" and tender, with a lggage car and two first class passenger cars attached, composing the trn leaving Toronto for Hamilton, at 10 minutes past four o'clock in the aternoon of the twelfth day of March last, having been precipitated into th Desjardin Canal by the breaking of the swing-bridge over said canal.

"The Jurors aforesaid find that the immediate cause of the accident was owing to the breaking of the forward axle of the engine-truck close to the wheel on the right, at a point on the road not ascertained, in consequence of which the left forward wheel of the truck left the rail at or near the switch near the bridge, causing the locomotive when entering on the bridge to diverge to the right, crushing and tearing away its supports, and precipitating the whole train into the canal, and resulting in the calamity which forms the subject of this melancholy inquiry.

"The Jurors further find that the locomotive 'Oxford' had recently undergone a thorough repair, and six days previously to this melancholy occasion, according to the evidence, had turned out of the repair shop in a good and satisfactory condition. They likewise find that before leaving the

Gaylord Bros., Inc.

Full details of the railway di
Stanford University Libraries
6105 041 785 168

HE2810
G78F9

® COLUMBIAN NATURAL CLASP NO. 75N
THE UNITED STATES ENVELOPE CO. SPRINGFIELD, MASS.
7½ X 10½

Gaylord Bros., Inc.

Full details of the railway di
Stanford University Libraries
3 6105 041 785 168

STANFORD UNIVERSITY
LIBRARY
Stanford, California

PRINT